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AUTHOR Freeland, Brett
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ABSTRACT

New apprenticeships were introduced to Australia in January 1998 to provide practical training opportunities to a wider range of people than the traditional trade-based apprenticeship system did. The effect of the new apprenticeship initiative on the type of employment-based training being undertaken in Australia was studied by analyzing data from the following sources: the National Centre for Vocational Education Research's contract of training database; historical employment data from the Australian Bureau of Statistics census of population and housing survey; and a macroeconomic occupation and industry employment forecast. The following were among the key findings: (1) apprentice and trainee commencements in 2000-2001 are predicted to decline from 1998-1999 levels by 45,000; (2) between 1995 and 1999, canceled contracts-of-training have remained relatively steady in relation to contracts-of-training commencements; (3) although service-based occupations will continue to increase in importance for apprentice and training, traditional trade-based occupations are predicted to remain a key component of Australia's employment-based training system; and (4) both demand and supply-side effects are influencing increases in commencements of apprenticeship and traineeship training for service-based occupations. (Thirty-eight tables/figures are included. The bibliography lists 24 references. Four tables detailing total numbers of apprentices and trainees by occupation in 1994-1999 are appended.) (MN)

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Occupational trends and new apprentice training

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Occupational trends and new apprentice training

Brett Freeland

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Foreword

The apprenticeship is the oldest structured form of trade training and continues to play an integral role in Australia's education, training and employment landscape. An apprenticeship or traineeship is a contractual agreement between an employee, who works for a specified period at below-value wages, and an employer who, in exchange for the wage premium, provides on-the-job training in specialised skills. The distinctive feature of an apprenticeship or traineeship is the indenture to a contractual agreement that legally binds parties for a specified period.

Apprenticeships and traineeships can be considered to play one of two roles, either as a form of entry-level employment-based training, which has been the case in the past, or as a supply mechanism for skilled labour to meet the needs of the economy. Both of these objectives of the system are examined in this report.

The purpose of this report is to identify the trends and developments which will shape Australia's apprentice and traineeship system over the coming years. It covers a wide range of labour market and education and training issues and will be of interest to many readers including business, students, community groups, education and training providers and government.

The report is not designed to provide a definitive forecast of future events in the labour market regarding numbers of apprentices and trainees. Rather, it intends to provide a comprehensive account of relevant trends and developments in Australian society, economy and policy, and an analysis of the implications that these trends are likely to have on the structure and emphasis of apprentice and trainee training. Results presented provide a useful guide as to future scenarios, especially regarding the distribution of apprentice and trainee employment opportunities in the Australian labour market.

The author would like to acknowledge the assistance of all those people who contributed to the report, especially those who provided comments on earlier drafts. Any errors or omissions remain the responsibility of the author alone.

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Glossary

The following terms and definitions are used extensively throughout the report.

Apprenticeship	❖ A system of training regulated by law or custom which combines on-the-job training and work experience while in paid employment with formal off-the-job training. The apprentice enters into a contract of training with an employer which imposes mutual obligations on both parties. Traditionally, apprenticeships were in trade occupations (declared vocations) and were of four years duration.
Demand	❖ The amounts of product or service that purchasers are willing to buy at a specified price. A demand occupation or demand for training is an occupation or training in which there is actual or expected shortage of qualified workers or training providers.
Indenture	❖ Traditionally, the contract between an apprentice and an employer under which the employer was bound to employ the apprentice throughout their training and the apprentice was bound to work for the employer throughout their training. Indenture has been superseded by a contract of training or training agreement.
New apprenticeship	❖ An umbrella term for the new national apprentice and traineeship arrangements which came into effect on 1 January 1998. The main characteristics of new apprenticeships include a contract of training between an employer and apprentice or trainee (in some cases their guardian), public funding support for employers, choice of training provider and a wider range of occupations and industries than previously available, competency-based training using national training packages, apprenticeships in schools, and a continued role for group training companies.
Supply	❖ The amount of a product or service available for sale, or the amount suppliers are willing to sell at a specified price.
Traineeship	❖ A system of vocational training combining off-the-job training at an approved training provider with on-the-job training and practical work experience. Traineeships generally take one or two years and are now part of the new apprenticeship system. Traineeships must meet the requirements for a declared vocation and lead to a nationally recognised qualification. Scope exists for fully on-the-job traineeships when employers are registered training organisations.

Training agreement	❖	(*Also known as a contract of training*) A legal agreement between an employer and an apprentice or trainee, which defines the rights and responsibilities of each party. The agreement is registered with the State training authority. Rights and responsibilities associated with the agreements include the employer guaranteeing to train the apprentice or trainee in an occupation or training area, and to allow time off work to attend any required off-the-job training; and the apprentice or trainee agreeing to learn all aspects of the occupation or training area, and to work for the employer for a specified period. Contracts of training supersede indentures.
Training market	❖	A system of competition among public and private providers in the provision of education and training, giving users greater choice of program and provider; adopted by the ANTA Ministerial Council (MINCO) as a national policy to encourage diversity and competition among providers.
Vocational education and training (VET)	❖	Post-compulsory education and training, excluding degree and higher level programs delivered by higher education institutions, which provide people with occupational or work-related knowledge and skills. VET also includes programs which provide the basis for subsequent vocational programs.

Executive summary

Key findings

- Apprentice and trainee commencements are forecast to taper-off in 2000–01, rather than continue at growth rates experienced between 1997 and1999. Commencements are forecast to be approximately 145 000 in 2000–01, a decline of 45 000 commencements since1998–99.
- Between 1995 and 1999 cancelled contracts-of-training have remained relatively steady when compared to contracts-of-training commencements.
- Service-based occupations will continue to increase in importance for apprentice and trainee training. However, traditional trade-based occupations are forecast to remain as a key component of Australia's employment-based training system.
- Both demand and supply-side effects are influencing increases in commencements of apprentice and traineeship training for some occupations, particularly those that are service based. A greater proportion of the Australian labour force is employed in services, thus creating the demand for such training, and the flexibility of the training system has allowed the development of service-oriented training, enabling the supply of training.

Background and method

New apprenticeships were introduced to Australia in January 1998. The new apprenticeship scheme was intended to provide practical training opportunities to a wider range of people than the traditional trade-based apprenticeship system. Two of the ways in which the new apprenticeship system introduced increased flexibility were the potential ways in which training can be delivered, and an increase in the range of occupations that are eligible for inclusion in the scheme.

This project examines the influence that the new apprenticeship initiative has had, and will continue to exert, on the type of employment-based training being undertaken in Australia.

The research utilises data from the NCVER's contract of training (COT) database, historical employment data from the Australian Bureau of Statistics (ABS) census of population and housing survey, and a macro-economic occupation and industry employment forecast. The data are analysed and manipulated to produce detailed forecasts of contracts of training (apprentice and trainee) commencements by occupational classification to 2000–01.

Apprentices and trainees

Previously, apprenticeships were available only to those people employed in declared vocations such as plumbing and carpentry. New apprenticeships have enabled the emerging service sector of Australia's industry to access this form of practical vocational education and the employer wage subsidies which are associated with it.

Apprentice numbers in Australia have increased steadily since the 1960s. In 1990 total numbers in training reached 160 000 and by 1999 they had passed 234 000 people.

Apprenticeships have traditionally been associated with young people, especially school leavers. Statistics from the COT collection show that there is an emerging trend of older people undertaking new apprenticeship training. The statistics also show that participation by

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females undertaking contracts of training is increasing. These trends suggest that the objective of the new apprenticeship scheme, to provide increased access to training for all people, is proving to be effective. In 1999 approximately 100 recognised vocations existed in which an apprenticeship or traineeship could be undertaken.

The fields of study in which most contracts of training are undertaken are services, tourism and hospitality, engineering and surveying, and architecture and building.

Training

There are four principal delivery methods available for apprentices and trainees:

- off-the-job institution-based training
- off-the-job distance education
- flexible work-based training
- enterprise-based training

For some time, the principal training provider for apprentice training in Australia has been TAFE. Although the new apprenticeship system was introduced with the capacity for employers and employees to choose their own training provider, TAFE continues to provide the majority of Australian apprentice and trainee training.

Australian employment

Two factors which have influenced the type of and extent of employment available in Australia are the emergence of globalisation, and the development of an information and service-oriented economy. The transition from a production- and manufacturing-based economy to an economy structured to provide services and information has resulted in a reduction of goods handling. The Australian training system that was developed for an economy in which goods were the dominant traded item must be adapted to meet the emerging needs associated with services, technology and the trade of information.

While there has been an increasing number of contracts of training being undertaken, the relative percentage of young persons in the Australian economy is declining. That is, the pool from which potential apprentices and trainees can be selected is reducing relative to the total labour force.

Occupational employment

While industries are independent, occupations span multiple industries. For example, a computer professional can work in finance, hospitality or personal services, in fact, almost any industry.

People employed in occupations that are industry dependent are more susceptible to productivity and technology shocks.

Employment prospects for occupations in the coming years will depend upon two main factors: firstly, on the distribution of occupational employment by industry sector and, secondly, on the skill level of the occupation.

Scenarios used in forecasting

Previously, the best available method for deriving apprentice and trainee numbers by occupation has been extrapolation of current trends. Simple extrapolations should be treated with extreme caution. Since 1997 apprentice and trainee numbers have increased significantly following the introduction of the New Apprenticeship scheme. It is unlikely that this recent growth will be maintained for an extended period. Therefore, an extrapolation based on these recent trends is likely to be severely misleading. To overcome the need to extrapolate current data, a macro-economic forecasting model has been used.

Calculations for this project use a model known as the Murphy model to forecast trends in occupational employment. The Murphy model is a large-scale, disaggregated-level dynamic macro-economic model which examines beyond the current trend and considers the influence of industrial composition and other factors when presenting employment forecasts.

In analysing the data available, a ratio was derived for three consecutive financial years: 1995–96, 1996–97 and 1997–98. The ratio combined commencement and re-commencement data from the COT data collection with occupational data from the ABS to derive a contracted employment (C:E) ratio. The ratio provides:

- an indication of the extent to which enterprises that employ people in various occupations utilise the apprentice and traineeship system
- a descriptive measure of changes in the extent of occupational participation in apprentice and traineeship training
- a value which can be utilised with macro-economic occupational forecasts to model scenarios of future apprentice and trainee numbers

In this report there are three C:E scenarios modeled, each of which provides output for the 2000–01 financial year. The scenarios used to derive C:E forecasts for 2000–01 are combined with employment data to calculate actual numbers of contract of training commencements. Details of these calculations are found throughout this section and in the appendices.

Scenario 1 is a constant measure, in which the C:E ratio is projected to remain at 1997–98 at least until 2000–01. That is, the C:E ratio from 1997–98 for each occupation is related to the employment forecasts for 2000–01 to derive contract of training commencement forecasts.

Scenario 2 is an extrapolation of the current trend data. The trend derived is the average growth experienced between 1995–96 and 1997–98 extrapolated for three years to 2000–01. Given the expansion of contract of training commencements following the introduction of the new apprenticeship training scheme, it is unlikely that this scenario is a realistic projection. Scenario 2 serves to show what is considered in the context of this study to be the maximum growth potential for contract of training commencements.

Scenario 3 draws on the macro-economic projections of employment growth to model the impact of economy-wide growth on the C:E ratio. The key element for deriving scenario 3 is the forecast annual employment growth by occupation developed through the macro-economic modeling. That is, the average forecast growth rate for each occupation is related to the C:E ratio for 1997–98 to derive the C:E ratio for 2000–01.

All three scenarios utilise the expertise of the macro-economic forecasting by including the employment forecasts by occupation. However, of the three scenarios, the third is preferred as a means of deriving the 2000–01 C:E ratio and forecasting contract of training commencements. Preference for scenario 3 stems from the fact that this scenario uses the employment occupational forecasts and relates these data to current occupational employment data.

Results

Forecasts of contributions to the number of apprentice and trainee commencements are able to capture the contribution of the demand-side influences (forecast increased employment) and also the supply-side effects (increased employment-based training opportunities for occupations and industries).

Occupations forecast to contribute significant proportions of the contract of training commencements in 2000–01 include the traditional tradespersons and related workers, and intermediate clerical, sales and service workers. General clerks are forecast to contribute 13 500 contract of training commencements in 2000–01. Globalisation and a trend towards an information economy is expected to maintain the momentum of Australia's industrial composition from manufacturing to services. The shift in industrial emphasis will continue the trend away from occupation-specific skills, which can quickly become out-dated, to general competencies. The changing nature of Australia's trade and composition of gross domestic product (GDP) present significant challenges to the national employment-based training system. Occupations in service industries, especially those related to health and personal services, are forecast to contribute significantly to future numbers of contract of training commencements.

While changes to Australia's industrial composition will provide non-traditional occupations with an opportunity to develop employment-based training, occupations and industries which have traditionally supported employment-based training, especially the trades, will remain important contributors to the national training effort.

No matter which perspective of the direction of Australian employment and training is considered, the future of the new apprenticeship system appears strong. Three scenarios presented in this research forecast that in 2000–01 between 138 800 and 208 000 persons will commence a contract of training. These figures are projections that derive from forecasts ranging from zero growth in the rate of commencements through to an extrapolation of the high-growth rates of current commencements. Despite presenting these extreme cases of commencements in contracts of training, a more probable outcome derived using a macro-economic forecasting model of occupations and a C:E ratio is also presented. The figures presented forecast a tapering in the number of commencements following the recent period (1998–1999) of extraordinary growth.

Examination of the forecasts at different level of disaggregation found that the more highly disaggregated the data, the less variation in the forecasts from the three scenarios. It is recommended that for resource allocation, policy planning and general decision-making, forecasts are derived using highly disaggregated data. While the alternative forecasting methods are not recommended, they should not be discounted as they provide a potential modeling option where high-level disaggregated data are not available. The integration of the national contracts of training data with a robust macro-economic forecasting tool has proven to be a valuable tool in determining future contract of training commencements by occupation.

Background and methodology

Background

Australia has had an apprenticeship system in some form or another since the early 1800s. Traineeships were formally established in Australia in 1985, following the recommendations of the 1984 Committee of Inquiry into Labour Market Programs (Kirby Inquiry). In the previous two decades, the extent of occupational coverage which apprentice and trainee training has included increased significantly. Following the introduction of the new apprenticeships initiatives in January 1998, it is necessary to re-examine the characteristics and outputs from the employment-based training system.

Widespread community support for Australia's apprentice and traineeship system is the principal reason Australian governments at all levels have sought to build on the current system, rather than adopting different approaches to employment-based vocational education and training. Despite the apprentice and traineeship system's traditional focus on a limited number of trade-based occupations, it has developed into an important component of the wider vocational education and training (VET) system.

The Australian apprentice and traineeship system has not been without its problems. Despite strong government-level support for the system, several factors have cast doubts on its operation and ability to deliver intended outcomes. Perceived problems include skill shortages in expanding industries and occupations, an inability to extend training into female-oriented employment and continuing high levels of youth unemployment.

> *The fundamental challenge facing apprenticeships [and traineeships] is whether or not it [the current system] is an effective mode of training for the emerging occupations and nature of work in the information economy and personal services* (Stromback 1996, p.7).

Australia's apprentice and traineeship system has been founded and developed on two basic concepts:

- Australia's traditional apprenticeship system has been an effective method of entry to the labour force and a principal source of skilled labour for Australian industries and enterprises.
- Australia retains the need for an apprentice and trainee training system that is driven by, and adaptive to, the needs of enterprise, rather than one shaped by the educational sector.

Stromback (1996, p.3) noted that increasingly greater emphasis is being placed on VET, including apprenticeships and traineeships, developing as business-led training. VET systems in Australia have been established and developed to ensure the development and maintenance of an adequately educated, skilled and flexible labour force. Effectively, VET serves two purposes, economic and social. VET contributes both to the continued development of Australian industries, whilst enabling individuals to participate in the specialised labour markets which have developed.

Rationale

The rationale for this project is to examine the role apprenticeships and traineeships will play in the future of Australian industries and occupations. Specifically, consideration is given to extent to which:

- apprentices and trainees are and will be employed
- characteristics of apprentices and trainees can be compared with the characteristics of the Australian labour force as a whole
- Australia's labour force skill and qualification profiles are changing as a result of apprentice and trainee training
- Australian and global industrial and political change will influence the numbers of apprentices and trainees employed

It is important to consider the potential impact, if any, that new apprenticeships have had on the training effort of Australian enterprises and the employment opportunities for individuals in the Australian labour force.

This study has aimed to identify and examine those industries and occupations which have adopted the new apprenticeship training as an effective and viable system for the development of skills. It is also aimed at determining the likely future trends in apprentice and trainee numbers and the characteristics of people undertaking this type of training.

The statistical analysis of apprentices and trainees includes all those persons who have commenced, continued or completed a contract of training between 1994–95 and 1997–98.

Project method

This report was undertaken by NCVER as part of its ongoing research into Australia's new apprenticeship system. Developments in the system are examined systematically and in detail in the reports *Apprentices and trainees 1997: Apprentices and trainees at TAFE*, and *Australian apprentice and trainee statistics: Apprentices and trainees in Australia 1985 to 1997* (NCVER 1999a, 1999b).

The project involved:

- analysis of national VET data collections and related socio-economic statistics
- consideration of literature regarding apprentices and trainees

Significant proportions of the statistics for the project were taken directly from NCVER *National apprentice and traineeship statistics*, and the Australian Bureau of Statistics 1996 *Census of population and housing*. Occupational employment forecasts derived from the Murphy macro-economic model were used as the basis for future levels of employment by industry and occupation. Published data sources drawn on for the study included:

- ABS 1996, *Census of population and housing: CDATA96*
- ABS 1998, *Labour force, Australia*
- Murphy, Chris and Douglas, Justin, 1998, *The outlook for jobs*, NCVER, unpublished appendix

To date, data relating to on-the-job training undertaken by apprentices and trainees have been collected separately from the data for off-the-job training. Matching work has enabled the combining of these data sets to provide detailed information on apprentice and trainee characteristics. Both apprentice and trainee contract of training data are included in the analysis. Although legislation under the new apprenticeship system means there is no longer any distinction made between the two types of training contract, the results of this analysis may be influenced by the variation in the length of the contract for each training method.

This study involved substantial analysis of previously unpublished data regarding Australia's occupational composition at highly disaggregated levels. Statistical analysis for the project included:

- deriving occupational commencement of apprenticeships and traineeships to employment ratios
- undertaking analyses of occupational responsiveness to factors affecting levels of apprentice and trainee employment

The methodology adopted for use in this project is based on the 'best knowledge' principles of modeling which recognise that econometric modeling undertaken by independent organisations, such as Econtech, contains greater knowledge of macro-economic variations than NCVER could possibly develop. The research value added by NCVER has been the incorporation of apprentice and trainee data into the analysis.

With the combination of the most highly detailed apprentice and trainee data available and a reliably accurate macro-economic forecast, highly disaggregated apprentice and trainee trends can be forecast and modeled by occupation.

Structure of report

The report is divided into four major sections. There are three main sections in the body of the report. In addition, comprehensive occupational forecast data are contained in the appendices.

In the first chapters the new apprenticeship system is examined. Analysis of the nature and type of training being undertaken and provided as part of Australia's training system is presented. Historical trends and comparisons among occupations and industry use of the training system are included in this section.

In the following chapters Australia's economic and industrial characteristics are summarised. In order to set the context for the research, the composition of Australia's education, employment and industrial structure is included in this summary

The final chapters present the compilation and analysis of apprentice to employment ratios by occupation. The analysis covers both the current situation and forecasts occupational trends as they relate to the apprentice to employment ratios developed.

Apprentices and trainees

The apprenticeship is the oldest structured form of trade training. It is a contractual agreement between an employee, who works for a specified period at below-value wages, and an employer who, in exchange, provides training in a set of specialised skills.

Apprenticeships and traineeships are declared under relevant State or Territory industrial training acts. Structural training undertaken as part of an apprenticeship or traineeship can be an accredited course, national recognised training modules, or a nationally accredited training package which leads to the awarding of a qualification. The Australian National Training Authority's 1998 annual report reveals that 'apprentices and trainees account for 13% of people doing VET courses annually' (ANTA 1999)

Since 1973 both State and Commonwealth governments have paid a subsidy to employers for each apprentice they employ. A training subsidy is also extended to trainees. In addition to the financial payments, State and Territory governments have regulated the conditions in which apprentices and trainees can be employed, establishing minimum educational requirements for apprentices and trainees.

Apprenticeships and traineeships have proven to be a viable and economic means of gaining skills which are practical and involve employment-based learning-by-doing. The only alternative way of acquiring these same skills is through full-time study at vocational education and training institutions.

Training packages

Under the National Training Framework (NTF), training packages have been developed in response to the occupational composition of Australian industry. Training packages must fit within the guidelines and regulations expressed by the relevant State or Territory training acts. The idea that a standard training package is suitable for all enterprises, apprentices or trainees is no longer acceptable, in light of changing consumer demands and niche markets. Training packages have been developed to be flexible. They can be used to develop new training packages for a range of industries by compiling appropriate modules from the training packages currently available.

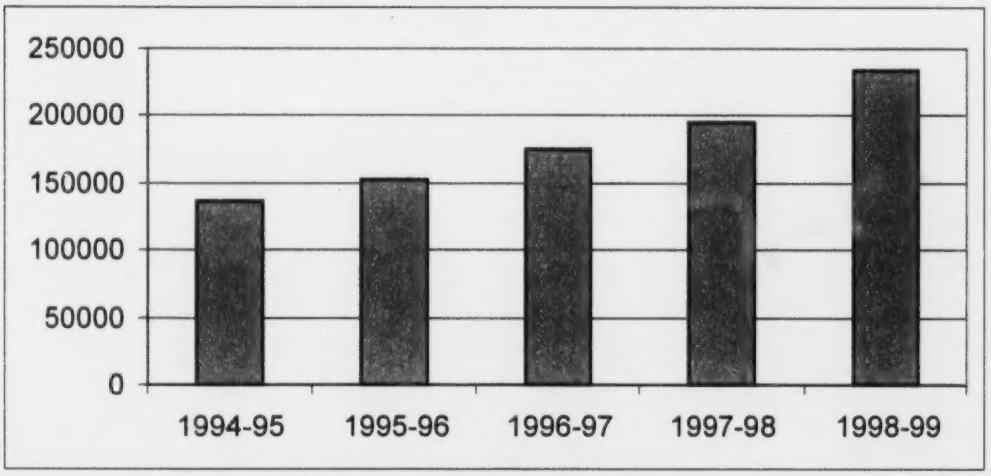
In the past, apprenticeships and traineeships were available only to those people employed in *declared* vocations such as plumbing and carpentry. The new apprenticeship initiatives have made apprentice and trainee training available to a wider range of vocations and industries including computing, hospitality and retail sales. Apprenticeships and traineeships remain covered by formal training agreements known as contracts of training—a legally binding agreement between employers and their apprentices or trainees. Employers are obligated under the conditions of the contract of training to provide adequate training, help and supervision for the employee to obtain a specified qualification. The contract also requires employers to provide adequate employment to enable the apprentice or trainee to complete the specified training within a fixed time. Under the contract, the apprentice or trainee is obligated to work for the employer whilst also undertaking necessary training to gain the specified qualification.

Growth in numbers of apprentices and trainees

During the past 20 years the number of apprentices and trainees in Australia has grown steadily. In the mid-1960s, 100 000 people were undertaking contracts of training. By 1990 this number had increased to almost 160 000. Since the early 1990s there has been some variation in the number of people in training, although the trend in numbers has been steadily upward

(see figure 2.1). Dandie (1996) noted that apprentice employment (people undertaking contracts of training) has kept pace with changes in the Australian employment, despite the perception of a decline in this type of employment-based training.

Figure 2.1: Apprentices and trainees in training Australia, 1994–95 to 1998–99



Source: Unpublished data, National apprentice and trainee statistics collection.

Smith (1998) notes that apprenticeship figures in Australia have historically remained fairly constant, with a general upward trend. This situation contrasts with the experiences of other countries, like Britain, where Gospel (1995) found that apprenticeship numbers have declined rapidly.

Numbers of people undertaking apprenticeships have grown parallel to expansions in many occupations and industries. However, they have been unable to grow at the same rate as the economy overall because of the rapid growth of the information and service industries. It has been in the areas of information and services that traineeships have 'taken up the slack', allowing for the introduction of contracts of training opportunities to non-trade industries and occupations.

Since 1990 there has been a general upward trend in the numbers of people undertaking contracts of training, with more than 234 000 people undertaking a contract of training in 1998–99. In 1998, 1.4 per cent of the Australian population aged 15 to 64 years were undertaking a contract of training.

Commencements, cancellations, completions and in-training data are presented in table 2.1. A steady upward trend in contracts of training in Australian employment has seen the numbers of people undertaking these contracts exceed 200 000 for the first time in 1998–99. Compared to the data from 1994–95, an additional 98 000 people commenced contracts of training in 1998–99. This figure indicates an annual average increase of more than 24 000 people—this equates to a 14.7 per cent annual average increase—undertaking contracts of training during this period.

Table 2.1: Commencements, cancellations, completions and numbers in training

Year	Commenced	Commenced as % in-training	Cancelled	Cancelled as % commenced	Completed	Completed as % in-training	In-training
1998–99	189600	81.0	37100	19.6	57700	24.6	234200
1997–98	119800	61.3	30000	25.0	50000	25.6	195500
1996–97	91000	51.9	23600	26.0	42000	24.0	175400
1995–96	70900	46.3	17700	25.0	30100	19.7	153000
1994–95	55400	40.8	15500	28.0	31800	23.5	135800

Source: NCVER, National apprentice and traineeship statistics.

Commencements

Commencements of contracts of training have increased at an average rate of 24 000 per annum since 1994–95 (see table 2.1). The numbers of people in-training reflect the increases that have been experienced in commencements. Commencements have accounted for an increasing percentage of total people in-training which partly reflects a trend toward shorter contracts associated with traineeships.

Reasons for the increasing growth in commencements include:

- the financial subsidies which have been made available to employers in some States and Territories
- the ability of adults to undertake contracts of training
- the expansion of apprenticeships and traineeships into industries and occupations such as information technology and retail sales

Commencements account for only those persons who are new to the course or system. They do not include those persons who are re-commencing courses of study. Re-commencements for the period of this research accounted for between 6 and 13 per cent of total commencement numbers. A contract of training is recommenced when an apprentice commences training in a particular occupation, having had a previous contract of training in the same occupation that has been terminated. The contract of training can be either with the same employer or a different employer.

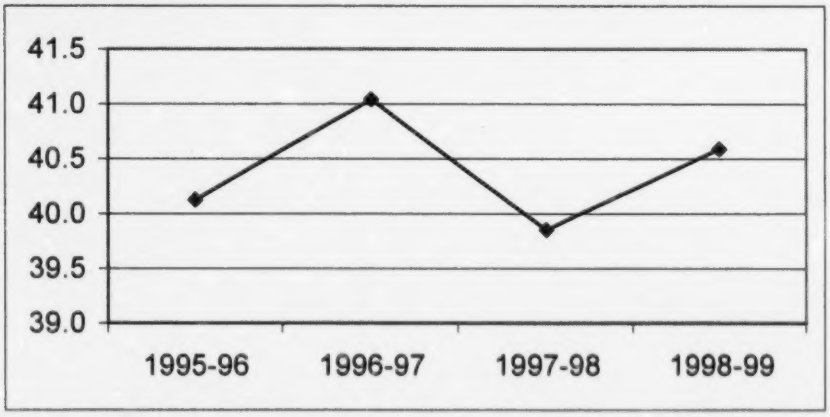
Completions

During the period 1994–95 to 1998–99 completions accounted for between 19.7 per cent and 25.6 per cent of people in a contract of training. There appears to be no direct relationship between the numbers of people in-training and the numbers of people completing their contracts of training. However, it would be reasonable to expect the strong growth in commencements during the period to produce flow-on effects for completions in coming years. The advent of the short-term traineeship contracts has resulted in a reduction of the lag between commencement and completion changes.

Cancellations

It has been argued that the numbers of people actually completing their contract of training in recent years has declined relative to the numbers of people commencing these contracts. Cancellations refer to those apprentices whose contract of training has been terminated after the probationary period. Withdrawals, unlike cancellations, occur in the probationary period of the contract of training and no financial benefit accrues to the employer during this time.

Figure 2.2: Cancellations as % commencements, apprentices and trainees



Note: Data show Withdrawn and Cancelled for year n against Commenced and Recommenced for year n–1.
Source: Unpublished data, National apprentice and trainee statistics collection.

Rather than support the suggestion that completions are in relative decline, figure 2.2 shows that there has, in fact, been a relatively steady percentage of people who cancel their contracts of training relative to the numbers of people who commence contracts. The ratio of cancellations and withdrawals relative to commencements has fluctuated by less than 1.5 per cent in the four-year period. This indicates that the numbers of people who remain in training has been steady relative to the total activity in the apprentice and trainee sector.

Summary

The apprentice and trainee system accounts for a significant proportion of the total VET activity each year. In recent years there has been considerable growth in the numbers of people undertaking a contract of training. Annual average increases of 23 000 commencements have seen total numbers of people in-training reach almost 220 000.

The Department of Employment, Education and Training (DEET 1995) predicted that the numbers of people participating in VET—including apprenticeships and traineeships—would continue to grow in future years, though at a slower rate. By 2005 it is forecast that 22 per cent of the population will hold a VET qualification. Current expansion of apprentice and trainee numbers in-training will necessarily contribute significantly towards achieving this figure.

Despite some skepticism that commencements and in-training numbers are offset by increased numbers of cancellations, the data do not support this argument. The data show a relatively constant relationship between the number of commencements and re-commencements in one financial year and the number of withdrawals and cancellations in the following year.

Key features of the apprentice and traineeship system are:

- increased numbers of declared vocations in which apprentice and traineeship training are available
- increased numbers of people undertaking both apprentice and trainee contracts of training
- stable percentage of cancellations and withdrawals from contracts of training relative to commencements and re-commencements

Apprentice and trainee characteristics

Increasing numbers of people are undertaking contracts of training—there are now more than 200 000. However, participation rates across different sectors of the population remain varied. This section examines changes to the demographic characteristics of people undertaking contracts of training.

Age

The apprentice and traineeship system was established as an entry-level system for young people, including school leavers, to the labour market.

As the numbers of people undertaking contracts of training have increased, the participation rates of people from all age groups have also increased. The participation rate for 15 to 64 year olds in apprentice and trainee training has increased from 1.1 per cent in 1995 to 1.6 per cent in 1998.

Relatively more 15 to 19 year olds and 20 to 24 year olds participate in contracts of training than do people from other age groups. Table 3.1 shows the participation rates by age at commencement of the contract of training.

Table 3.1: Apprentice and trainee participation rate by age at commencement (%)

Age group	*1995*	*1996*	*1997*	*1998*
15 to 19	3.3	3.9	4.1	4.5
20 to 24	1	1.6	2	2.4
25 to 29	0.4	1	1.5	1.9
30 to 64	0	0	0.1	0.2
15 to 64	**0.5**	**0.7**	**0.9**	**1.1**

Source: Derived from NCVER National apprentice and trainee statistics and ABS Australian Demographic Statistics, Cat no. 3101.0.

The support of those people aged 15 to 24 years for apprenticeships and traineeships may, in part, be a result of the targeting of the programs to young people entering the Australian labour force. This apparent support may also be an indication of employers' willingness to provide long-term investments in the training of younger people, or a reflection of the restriction placed on the participation of older workers in some apprentice and trainee training. In 1994 the Working Nation initiative relaxed the age restrictions for people able to undertake apprentice and trainee training.

Data in table 3.1 show there has been an increase in older people participating in apprentice and traineeship training. Those aged 25 to 29 years increased their participation at rates greater than all other age cohorts between 1995 and 1998. People aged 25 to 29 years accounted for an additional 1.5 per cent of all people undertaking contracts of training. Since 1995 people aged 30 to 64 years have emerged in apprentice and trainee participation figures. In 1998, 20 000 people aged 30 to 64 years commenced a contract of training.

Gender

One of the criticisms of the traditional apprentice and traineeship system is that it developed training opportunities in occupations and industries that have provided predominantly male-oriented employment. Recent changes to the apprentice and traineeship system have

introduced training to a greater range of occupations and industries, especially those industries and occupations that have either gender equality or female-oriented employment.

In 1994 there were only 16 females in every 100 apprentice and trainee positions; by 1998 this number had almost doubled.

Table 3.2: In-training and commencements of contracts of training by gender (%), 1994–98

	1994		1995		1996		1997		1998	
	male	female	male	female	male	female	male	female	Male	female
In-training	83.5	16.5	83.8	16.2	78.5	21.5	74.1	25.9	70.7	29.3
Commencements	75.0	25.0	69.7	30.3	65.0	35.0	60.9	39.1	58.7	41.3

Source: National apprentice and trainee statistics.

Contract of training commencements reflect an increasing acceptance by employers to employ females as apprentices and trainees. In the four years from 1994 to 1998 females accounted for an additional 16 per cent of commencements of contracts of training. In 1998 females accounted for 41 per cent of all commencements. In fact, 61 000 women commenced a contract of training in 1998.

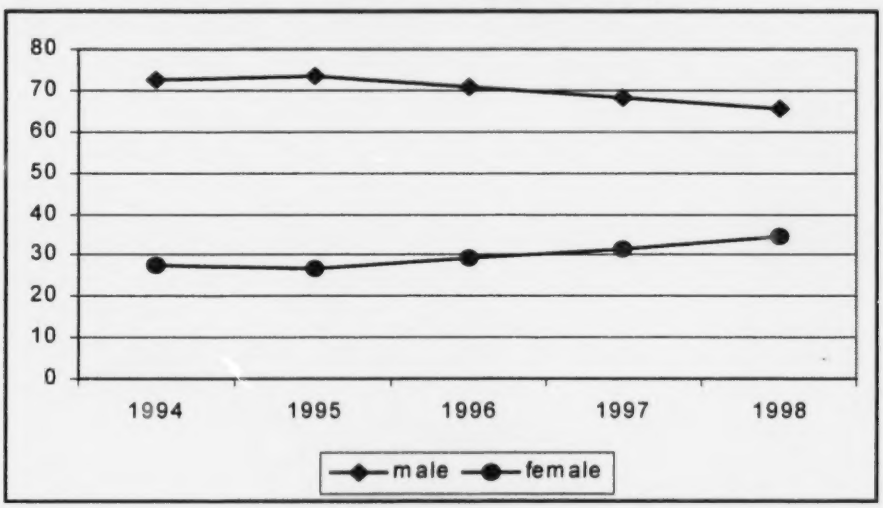
Table 3.3: Completions of contracts of training by gender (%)

	1994	1995	1996	1997	1998
Male	72.4	73.5	70.9	68.4	65.5
Female	27.6	26.5	29.1	31.6	34.5

Source: National apprentice and trainee statistics.

Completions by females comprised only 26.5 per cent of total completions in 1995. This figure increased to a level of 34.5 per cent in 1998. Increasingly, females will comprise a greater proportion of total completions as strong increases in female commencements (shown in table 3.2) 'flow through' to completions data. Figure 3.1 shows the convergence of female and male completions of contracts of training in recent years.

Figure 3.1: Completion of contracts of training by gender, 1994–98



Source: NCVER, National apprentice and trainee statistics.

While the data show female participation to be increasing, there remains a dominance of male apprentices and trainees in traditional trade-based courses. The changes in participation by gender between 1994–1998 should not be mistaken for increasing equality of employment by

gender. Rather, these changes reflect the adoption of apprenticeships and traineeships by occupations and industries with greater female participation rates than the trades.

Other characteristics

In addition to the age and gender descriptions of apprentices and trainees, 1998 new apprentice statistics reveal other demographic characteristics of the population including the facts that:

- 2.8 per cent of new apprentices were of Aboriginal or Torres Strait Islander origin
- 3.4 per cent of new apprentices reported some form of disability—visual disabilities are the most common disability reported
- 34.9 per cent of new apprentices reside in rural or remote areas. In fact, 16.5 per cent of new apprentices attend training institutions located in a different geographic region to their usual residential address

Summary

The data contained in tables 3.1–3.3 describe an emerging trend of older people and females participating in apprentice and trainee training. However, the data also show older people and females remain minor participants in the training system. The training system remains focussed on, and supportive of, training and employment for young workers, aged 15 to 24 years, entering the labour force.

Data on the characteristics of apprentices and trainees reveal the following facts.

- An increasing number of older people are undertaking contracts of training, associated with a relaxing of age restrictions for apprentices and trainees.
- A majority of apprentices and trainees are aged 15 to 24 years.
- Female participation as a percentage of total people undertaking contracts of training is increasing. This rate is associated with the expansion of training into occupations and industries which are not dominated by male employment.
- The majority of apprentices and trainees are male.

Nature of training undertaken

Prior to January 1998 apprenticeships and traineeships were available only to those people in 'declared' vocations such as plumbing, carpentry and engineering and other trades. New apprenticeships—introduced on 1 January 1998—enabled apprentice and trainee training to be available in a wide range of industries and occupations. The new apprenticeship scheme also allowed for the customisation of contracted training to suit enterprise and location needs.

Training efforts have been effectively expanded into areas where opportunities have not previously existed. A better ability to react to projected employment growth has resulted in increased training effort and allowed skills shortages to be addressed. Training packages have been developed for all the major industry sectors. In 1999 approximately 100 recognised vocations existed in which an apprenticeship or traineeship could be undertaken. In addition, the flexibility which could be incorporated into training to suit the needs of individual enterprises has made the industrial coverage of the training system exhaustive.

Field of study

The major fields of study undertaken by apprentices and trainees are described in table 4.1. In 1997 the three principal fields of study by percentage of total course enrolments were engineering and surveying (37.1%), services, hospitality and transport (16.8%) and architecture and building (15.6%). At the other end of the scale there were several fields of study where apprentice and trainee enrolments were relatively low—veterinary science and animal care, and law and legal science both had course enrolment levels that comprised less than 1 per cent of all apprentices and trainees.

Table 4.1: Apprentice and trainee course enrolments, by field of study 1997 (%)

Field of study	% apprentices and trainees
Land & marine resources	5.0
Architecture, building	15.6
Arts, humanities and social sciences	1.0
Business, administration, economics	8.9
Education	1.4
Engineering, surveying	37.1
Health and community services	4.4
Law, legal studies	0.7
Science	1.1
Veterinary science, animal care	*
Services, hospitality, tourism	16.8
VET multi-field education	7.9
Number ('000s)	**149.5**

Note: * represents figure less than 0.1%.
Source: NCVER 1999, *Australian apprentice and trainee statistics 1997*, NCVER, Adelaide, p.14.

VET multi-field study provides preparatory courses which are the foundation for studies in specific vocational courses. The 7.9 per cent of apprentices and trainees who were enrolled in VET multi-field courses were likely to be training towards a 'full' AQF qualification.

Qualification level

In order to fulfil the conditions of a contract of training, an apprentice or trainee must have complete accredited training. The majority of apprentices and trainees (90.6%) complete a qualification at AQF level III or above. AQF level III was the minimum qualification on which the apprenticeship system was developed. Following the introduction of the new apprenticeship scheme, the minimum qualification for apprentice and traineeship training has declined in importance.

Table 4.2: Apprentice and trainee graduates 1997

	1997 GDS %
AQF Level II equivalent or lower	9.4
AQF Level III equivalent or above	90.6
Total	100.0
Numbers ('000s)	**8.88**

Source: NCVER 1999, *Australian apprentice and trainee statistics 1997*, NCVER, Adelaide.

Figures presented in these tables apply only to those apprentices and trainees who have enrolled at TAFE institutions, so they may differ from data for all apprentices and trainees. Table 4.3 contains data describing the level of qualification being studied by apprentices and trainees. These data show that trade certificates at AQF level III, or equivalent, comprise the majority of enrolments. In fact, 82.5 per cent of all apprentices and trainees undertook an AQF level III or higher level qualification in 1997.

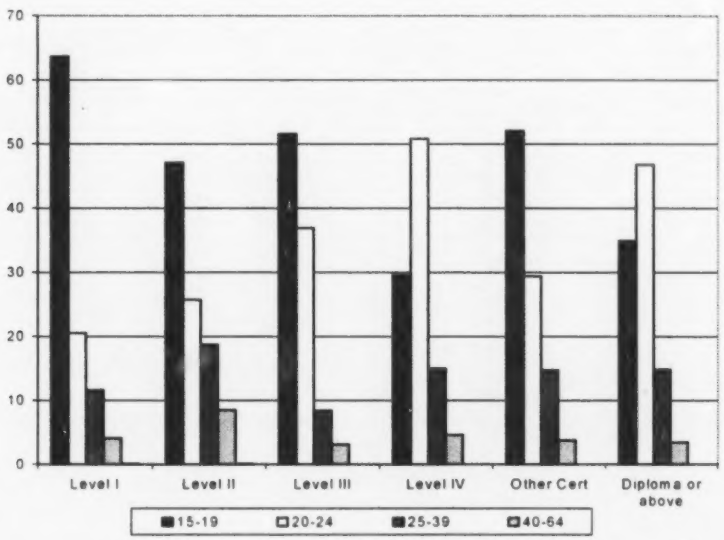
Table 4.3: Apprentice and trainee enrolments in AQF or equivalent courses (%), 1997

	AQF level					
Age	Level I	Level II	Level III	Level IV	Other cert.	Diploma or above
15–19	63.7	47.1	51.6	29.6	52.1	34.9
20–24	20.5	25.7	36.9	50.8	29.4	46.8
25–39	11.6	18.7	8.4	15.0	14.7	14.8
40–64	4.1	8.5	3.1	4.6	3.8	3.5
Other	0.1	0.1	0.0	0.0	0.0	0.0
Male	69.5	57.2	82.1	75.7	60.8	67.9
Female	30.5	42.8	17.9	24.3	39.2	32.1
% Total	2.8	14.7	63.6	6.0	8.6	4.2

Source: NCVER 1999, *Australian apprentices and trainees recent trends: At a glance*, NCVER, Adelaide.

Males comprised 82.1 per cent of all persons enrolled in AQF level III courses. The majority of apprentices and trainees undertaking AQF level III courses were young. In fact, 51.6 per cent of enrolments in AQF level III courses were by people aged 15 to 19 years. Females enrolled in apprentice and trainee training are concentrated in level II and 'other certificate' courses, where 42.8 per cent and 39.2 per cent respectively of the total enrolments are females. At AQF level III, qualifications traditionally associated with trade-based apprenticeships, only 17.9 per cent of the total students enrolled were female.

Figure 4.1: Apprentice and trainee AQF level, by age 1997 (%)



Source: NCVER 1999, *Australian apprentices and trainees recent trends: At a glance*, NCVER, Adelaide.

There is no direct relationship between the age of apprentices and trainees and the AQF level qualification they are studying. However, people aged 15 to 19 years and people included in the 'other' classification tend to be concentrated in the lower AQF levels. People aged 20–24 years comprise a high proportion of those undertaking higher level studies. Level IV (50.8%) and Diploma and above (46.8%) level studies have concentrations of people aged 20–24 years. Level IV and diploma and above are the only two qualifications where people aged 15 to 19 years do not comprise the majority of apprentices and trainees.

Annual hours

Apprentices and trainees who did not enrol for the purpose of achieving recognition of prior learning (RPL) or credit transfer undertook an average of 298 hours of formal study in 1997. This figure was 100 hours per annum above the average level of RPL and credit transfer for the average VET student. Apprentices and trainees enrolling for the purpose of RPL and credit transfer accounted for only 0.4 per cent of all apprentices and trainees in 1997. Table 4.4 shows the percentage of apprentices and trainees who undertook various hours of training in 1997.

Table 4.4: Apprentice and trainee hours of training 1997 (%)

Annual hours	%
Less than 50	6.8
50–99	5.9
100–199	13.7
200–540	65.6
Greater than 540	7.6
RPL /credit transfer	0.4

Source: NCVER 1999, *Australian apprentice and trainees 1997*, NCVER, Adelaide, p.20.

Reflecting the average hours attending courses by apprentices and trainees, 65.6 per cent of all apprentices and trainees undertook between 200 and 540 annual hours of training. Male apprentices and trainees were four times more likely than females to undertake between 200

and 540 hours of annual training (80% of the 65.6% were male). Annual hours are another reflection of the dominance of male participation in the traditional trade-based apprenticeships.

Interestingly, 7.6 per cent of all apprentices and trainees were enrolled to study more than 540 hours per annum. This constitutes an average commitment of approximately 10 hours or 1.25 working days per week.

Providers of training

The current apprentice and traineeship system requires accredited training to be provided by a registered training organisation. RTOs are required to be registered to enable training authorities to monitor and ensure that the standard of training provided is of a high and uniform standard across all occupations and industries.

There are four principal delivery methods available through Australian RTOs. These are:

- *Off-the-job institution-based training*. Apprentices or trainees are released from the workplace to undertake training at an approved training centre with an RTO. Day release generally involves one or two days per week, up to a total of 65 days (or 13 weeks). In some instances apprentices and trainees are required to attend block release involving between one week and three weeks at a time. In some cases training is delivered on the work site although it does not involve productive work.
- *Off-the-job distance education*. Training is delivered by any self-paced learning method that allows trainees to learn outside the workplace and, in some cases, outside the classroom.
- *Flexible work-based training*. Two types of training are available, on-the-job or 'mixed' delivery. Employers are responsible for the delivery and implementation of training and learning as an activity separate to work practices. RTOs remain responsible for the quality of training provided and must ensure standards are met which are in keeping with the national recognition framework criteria.
- *Enterprise-based training*. This delivery has been developed for enterprises providing structured training to their apprentices and trainees. The enterprise effectively becomes an RTO provider and may deliver the training directly on the job in the workplace using any of the delivery methods presented above.

Group training companies are not considered to be an enterprise, as described in any of the training methods. Group training companies employ apprentices and trainees who are then hired out to host employers. Group training companies promote the uptake of apprentice and trainee employment by providing work to the apprentice or trainee for a period which enables the contract of training to be completed.

Provider types

Providers are groups such as TAFE institutions, commercial or non-TAFE training institutions, and enterprise training organisations. Providers supply training to clients. In this study apprentices and trainees are joint clients with the employer with whom they have undertaken a contract of training. The user choice policy makes it possible for employers, apprentices and trainees to select the institution which will deliver the formal training. TAFE has been, and continues to be, the largest training provider. Fitzgerald (1998, p.12) suggests that TAFE is between one and two times the size of competing training providers which are registered to provide apprentice and trainee training.

Continuing traditions

Although flexible methods of delivery and a user choice environment for the delivery of training have been promoted, Kearns (1997) shows that traditional classroom-based training

remains the norm in many industries. Such a reliance on traditional training methods may be a reflection of the Australian industrial composition which is dominated by small and medium-size enterprises. These smaller enterprises are less likely to be able to develop customised training delivery methods and co-ordinate or supervise formal on-the-job formal training. The delivery of apprentice and trainee training by TAFE is likely to remain as important for small and medium-size enterprises.

Summary

Four key points emerged from the data.

- Despite the increased range of occupations available to apprentices and trainees, almost 70 per cent of apprentices and trainees were enrolled in one of three fields of study.
- AQF level III remains the dominant qualification studied by apprentices and trainees. However, there is a small proportion, 9.4 per cent, of apprentices and trainees who studied for qualifications below AQF level III in 1997.
- Higher proportions of young people, especially those aged 15 to 19 years, are concentrated in lower level qualification courses.
- The average annual time spent in training by apprentices and trainees was between 200 and 540 hours in 1997. Recognition of prior learning and credit transfer accounted for only 0.4 per cent of total hours attained by apprentices and trainees.

An increasing range of training-delivery options for apprentices and trainees is being developed. However, despite the variety of training delivery alternatives, the majority of formal apprentice and trainee training remains classroom based. The dominant training provider continues to be TAFE.

Influences on Australian employment

The demand for VET skills, including apprentice and traineeship training, is directly influenced by the performance of the Australian economy and the labour market. In this chapter the factors which affect the economy and the labour market are examined in detail. The following chapter examines the effect forecast changes are expected to have on the demand and supply of skills in the labour market, paying particular attention to the characteristics of Australian workers, conditions of work and the occupations and industries which dominate the Australian economic landscape. This research utilises forecasts of changes in the economy and labour market obtained from broad-based macro-economic modeling.

Economic performance

Changes in the composition of traded items for both exports and imports can affect Australia's economy dramatically. Services and manufactured goods account for around 20 per cent of Australian exports, and skill development in these areas can effectively assist Australia to remain internationally competitive.

In the year ending March 1999, the Australian economy grew by of 4.8 per cent. Domestic demand, driven by business investment and private consumption, contributed significantly to the level of growth. Net exports recorded a decline while imports increased steadily. Service exports suffered the greatest levels of decline, although the rate at which the imports of goods and services increased was almost equal.

Industrial composition

Despite the positive benefits to the Australian economy from the expansion of the gross domestic product (GDP), output growth in some industries has limited implications for apprentice and trainee employment. An analysis of recent growth in GDP by industry sector and the industry's relative contribution to employment is shown in table 5.1.

Table 5.1: GDP and employment, by industry

	Industry	GDP ($m)(a)	Employment (b) (000s)	% total
Product industries	Agriculture	18220	463	5.1
	Mining	19310	83	1.0
	Manufacturing	16140	1122	13.2
	Electricity, gas & water	14270	65	0.8
	Construction	28180	597	7.0
Service industries	Wholesale trade	45970	499	5.9
	Retail trade	31640	1245	14.6
	Accommodation, cafes & restaurants	8280	404	4.7
	Transport & storage	25330	394	4.6
	Communication	17630	149	1.7
	Finance & insurance	26070	312	3.7
	Property & business services	36990	895	10.5
	Government administration & defence	15470	397	4.7
	Education	19180	584	6.8
	Health & community services	23470	800	9.4
	Cultural & recreational services	9140	203	2.4
	Personal & other services	8240	340	4.0

Note: (a)=GDP from 1996–97; (b)=employment figures from Murphy model forecasts 1997–98.

The strength of the service sector in the Australian economy in relation to production industries is clearly shown by data in table 5.1. Production industries provide only one in four jobs in the economy; the remaining three jobs are provided by the service industries. Service industries, in addition to providing the majority of employment, also contribute $267 billion or 60 per cent of the total GDP. Production industries contribute $141 billion, 31 per cent of GDP, while the remaining 9 per cent is attributed to dwelling ownership, and import duties less imputed bank charges.

It is clear from the data presented in table 5.1 that a considerable variation in Australia's economic performance can have very different effects on the employment of the Australian workforce and result in variations of the demand for VET qualifications.

Vocational qualifications comprise the majority of qualifications held by persons in the workforce. Table 5.2 shows that, of the 41.5 per cent of the workforce who have a qualification, 43 per cent have a vocational qualification. In seven of the nine major occupational classifications, vocational qualifications—both skilled and basic—comprise over half the qualifications held by workers. Tradespersons and related workers, and associate professionals are the two occupational groups in which vocational qualifications are the dominant qualification attained. In 1996, 53.6 per cent of tradespersons and related workers and 20.6 per cent of associate professionals held a vocational qualification.

Table 5.2: Educational attainment of employed persons by occupation and type of post-school qualification at 1996 census

ASCO code and occupation	Proportion of workforce with (%)								
	Degree or higher	Diploma	Associate diploma	Skilled vocational qualification	Basic vocational qualification	Sub-total with qualification	No qualification	Not stated/ unknown	Total
1000 Managers & Administrators	16.9	5.2	3.6	16.0	3.4	45.0	46.7	8.3	100.0
2000 Professionals	68.1	4.3	3.6	2.8	2.1	80.8	15.8	3.3	100.0
3000 Associate Professionals	11.8	4.2	6.9	14.0	6.6	43.5	48.7	7.8	100.0
4000 Tradespersons & Related Wkrs	2.6	1.5	4.7	51.2	2.4	62.4	31.2	6.4	100.0
5000 Advanced Clerical & Service Wkrs	25.9	3.2	13.0	13.0	0.0	55.1	41.6	3.2	100.0
6000 Intermediate Clerical, Sales & Service Wkrs	6.6	3.1	3.9	6.3	9.5	29.4	59.3	11.3	100.0
7000 Intermediate Production & Transport Wkrs	1.4	0.8	1.1	14.6	2.5	20.5	71.3	8.2	99.9
8000 Elementary Clerical, Sales & Service Wkrs	3.7	1.3	1.9	4.1	3.4	14.3	78.9	6.8	100.0
9000 Labourers & Related Wkrs	1.6	0.7	0.8	7.2	1.3	11.6	79.7	8.7	100.0
Not Stated	4.2	1.7	1.2	7.3	1.6	15.9	64.1	20.0	100.0
Total Australian workforce	15.5	4.5	3.6	14.2	3.6	41.5	51.3	7.3	100.0

Source: ABS 1996, Census of population and housing.

International influence

As highlighted earlier in this chapter, the global economy (through trade and investment effects) has a significant influence on the Australian economy.

One of the most influential economic issues to affect the Australian labour market since the 1980s has been the increasing exposure of the Australian economy to competition through its integration into international markets. Micro-economic reforms have also had a significant influence in the re-shaping of Australian markets and industries. The result of changes to the micro-economic structure of Australia, combined with global trade effects, has resulted in rapid change (perhaps exemplified by manufactured export goods during the mid-1980s) in the composition of Australia's exports. The discussion contained in this chapter shows that the composition of the Australian labour market is continually changing. Exposure to global influences and micro-economic reforms means that while some trends in job growth will continue, others will change dramatically. It is dangerous and ineffective simply to extrapolate current job trends in attempts to predict the future employment mix.

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Globalisation

The process by which the economy of Australia, and that of many other countries, has been integrated into a global market is commonly referred to as *globalisation*. Factors which have affected globalisation include advances in telecommunications and information technology, relaxing of barriers to foreign investment and the formation of free-trade alliances. Interestingly, many of these free-trade alliances, especially regional trade blocs, are exclusionary.

The effect of globalisation on Australia's economy has been to enable the establishment of trade relationships with countries outside the traditional markets of Europe, North America and Japan. While the range of trading partners has increased, so too has the range of traded goods and services. The increased level of services and manufactured goods exported by Australia has served to reduce the nation's economic sensitivity to fluctuations in demand for commodities.

By increasing both the range of trading partners and the range of traded items, Australian governments and industries have protected the domestic labour force from the effects of undesirable developments, such as the Asian financial crisis, in the economies of our trading partners.

Summary

In summary, two factors impacting on the Australian employment landscape are *globalisation* and the emergence of the *information economy*. The transition of Australian production from manufacturing to services and information has resulted in a considerable reduction in handling of traded items. Between 65 and 75 per cent of all employment in *advanced* countries now involves no handling of goods (Hall 1995). For VET this shift in emphasis of trade has seen a greater demand for general competencies, rather than specific skills which have the potential quickly to become outdated. The change in trade and GDP presents significant challenges to the apprentice and traineeship system.

This chapter shows that changes are occurring in the mix of occupations and industries in Australia. Exposure to global economic influence and micro-economic reforms has meant that while some employment trends will continue unabated, others will change dramatically, making it inappropriate simply to extrapolate current job trends to predict the future employment composition. Other influences on the employment and industrial composition of Australia will be examined in the following chapters. Methodologies used to forecast the future composition of Australian industrial and occupational employment will also be explored.

Australia's labour force

The labour force

The changing size and distribution of Australia's population have implications for service provision and delivery of education, training and employment.

Labour force status in Australia is a classification of the civilian population aged between 15 and 64 years old who are employed, unemployed or not in the labour force (ABS 1998). It is based on those who are not in compulsory education and those who have not yet reached the compulsory retirement age.

Demographic shifts

Australia's population was expected to exceed 19 million in August 1999. Contributions to the increase from 18 to 19 million people were distributed evenly between natural increase and net overseas migration. Table 6.1 contains details of Australia's working-age population.

Table 6.1: Population aged 15–19 and 20–24 as % working-age population, 1995–98

	15–19 year-old population	15–19 as % of working-age population	20–24 year-old population	20–24 as % of working-age population	15–64 year-old working-age population	Annual change in working-age population
1998	1316000	10.49	1361000	10.85	12545000	184000
1997	1294000	10.47	1372000	11.10	12361000	165000
1996	1279000	10.49	1397000	11.45	12196000	164000
1995	1269000	10.55	1430000	11.88	12032000	N/A

Source: ABS, Australian Demographic Statistics, Cat no.3101.0, various years.

Data from table 6.1 show that between 1995 and 1998 the population aged 15 to 19 years remained stable as a percentage of the working-age population. It declined by 0.06 percentage points. This means that variations in the percentage of 15 to 19 year olds employed as apprentices or trainees result from factors other than the number of potential employees. Furthermore, analysis of working-age population data indicates a decline in the percentage of people aged 20 to 24 years old who are undertaking apprenticeships and traineeships. This trend could reasonably be unexpected when examining population data. Between 1995 and 1998 the 20 to 24 year old cohort contributed a reduced share of the working-age population. The cohort experienced a 1.03 percentage point decline, a total of 69 000 people.

Participation, employment and unemployment

The levels of unemployment and the unemployment rate in Australia are determined by changes in the numbers of people in the working-age population, the labour force participation rate and the levels of employment in the economy. In this section the participation rate and levels of employment are examined.

As young people move out of education, there are marked changes in their labour market characteristics and participation. These changes include shifts from part-time to full-time employment. Consideration of these changes is necessary when interpreting youth labour market activity.

The labour force participation figures for people aged 15 to 19 years are presented in table 6.2. The data show that in May 1998, 6.5 per cent of 15 to 19 year olds were unemployed and not

studying, and only 16.4 per cent were employed full time. Apprentices and trainees must either be employed full time or be a student who is also participating in the labour force. In 1998, 56.3 per cent, 740 900 people aged 15 to 19 years old, were potential apprentices and trainees.

Table 6.2: Labour force status, 15 to 19 year olds, May 1998 (% population)

	Unemployed		Employed			Not in labour force	
	Non-student	Student	Full-time	Part-time student	Part-time non-student	Non-student	Student
Male	7.2	4.2	21.5	4.3	18.9	3.3	40.7
Female	5.7	4.7	11.1	6.9	28.3	4.2	39.0
Total	**6.5**	**4.4**	**16.4**	**5.5**	**23.5**	**3.7**	**39.9**

Source: ABS 1998, *Demographics*, Cat no. 6203.0, May, AGPS, Canberra.

When considering the data contained in table 6.2, it is necessary to remember that much teenage employment is transitory. Apprentice and traineeship training opportunities are circulated among the teenage labour force as employment within enterprises 'turns over'.

The changing nature of work

This section considers the roles that people who are employed are expected to play in the economy. Employment statistics are presented according to demographic characteristics, occupations, industries, hours worked, and whether the employees are full time or part time.

By relating employment levels to the population levels examined in the two previous sections, the magnitude and impact of job growth for potential apprentices and trainees is evaluated. When considered as a total system, the employment to population ratio for Australia has been relatively steady in recent years and was 58 per cent in 1998.

Table 6.3: Employed persons to population ratio(a)

Age	1995	1996	1997	1998
Age 15–19	46.5	47.0	46.8	46.1
Age 20–24	72.5	73.0	71.9	71.5
Age 25-34	73.5	74.4	74.1	74.8
Age 35-44	76.3	77.2	76.7	76.2
Age 45-54	73.4	73.9	73.7	73.5
All ages	57.7	58.3	58.0	58.0

Note: (a)=employment to population ratio for any group is the number of employed persons expressed as a percentage of the population aged 15 and over in the same age group.

Source: ABS 1999, *Australia now: A statistical profile—labour employment.*

By age group, the employment ratio of 20 to 24 year olds between 1995 and 1998 was more volatile than the employment ratio for 15 to 19 year olds. By gender, males aged 35 to 44 years in 1998 had the highest employment to population ratio with 86.8 per cent. Females aged 20 to 24 years were the most likely of any age group to be employed in 1998, with 68.1 per cent of the population in employment.

It is apparent from the data, though not represented in the table, that female employment ratios for all ages are increasing at a rate faster than the rate for males. Female employment ratios remain lagging behind those of males, with some 20 per cent difference between the highest employment ratio for each gender.

It is important we understand the status of Australia's employees; that is, the ratio of own-account workers and employees. The level of employment opportunities available in Australia to utilise the apprentice and trainee programs is reliant on the numbers of employees. In

addition to the numbers of people who are employees, the size of firms and their relative capacity to supervise apprentices and trainees determines the extent of opportunities made available to the labour force. This perspective is examined at the end of this section.

Table 6.4: Employed persons, status in employment ('000s) (a)

	1995	1996	1997	1998
Employers	355.6	363.9	339.6	358.0
Own-account workers	822.9	849.1	821.3	857.4
Employees	6802.1	6998.9	7126.1	7158.4
Contributing family workers	77.3	75.4	75.9	65.9
Total	**8057.9**	**8287.2**	**8362.9**	**8466.7**

Note: (a)=annual averages based on quarterly data.
Source: ABS 1999, *Australia now: A statistical profile—labour employment.*

Data from table 6.4 show the number of employees in Australia has steadily increased between 1995 and 1998, with an additional 365 000 people employed in this time. In contrast to the numbers of employees, contributing family workers have steadily declined with a 15 per cent decline in numbers of people in this category of employed people between 1995 and 1998.

Hours of work

Australia's apprenticeship system was originally founded on the basis that employment for the individuals undertaking a contract of training could be provided on a full-time basis by their employers. In Australia full-time employment is considered to be those positions where, on average, 35 hours or more work is undertaken per week. Part-time employment is by definition those workers who, on average, work less than 35 hours per week.

Over the last decade the increase in total employment has exceeded 18.5 per cent. Data in table 6.4 show that total employment in the economy now exceeds 8.4 million jobs. However, full-time employment increased by only 10.5 per cent over the last decade and accounted for less than half the positions created. In contrast, part-time employment for the same period increased by 760 000 jobs, an increase of 53 per cent.

Casual employment trends should be mentioned in regards to the hours of work as they relate to the contract of training obligations. Contract of training obligations mean employers must provide adequate employment to enable an apprentice or trainee to complete their training in a specified time. Waterhouse et al. (1999) noted that casual employment is undermining full-time employment in terms of jobs and, as an entry point to the labour market for many young people, it is effectively negating the need for an apprentice and traineeship system. VandenHeuvel and Wooden note:

> *...there are obvious differences across industries in the extent of casual labour, with casual employment shares especially high in accommodation, cafes and restaurants, cultural and recreational services, and retail trade* (VandenHeuvel & Wooden 1999, p.1).

Considering the implications of the casualisation of the workforce, VandenHeuvel and Wooden (1999, p.7) propose that it is incorrect to assume that casual employment is synonymous with precarious employment. The ABS (1998), examining casual employment in New South Wales, found that only 18 per cent of casual jobs involved part-time work and irregular incomes.

An issue that has emerged with the casualisation of the workforce—and been supported by VandenHeuvel and Wooden (1999)—is the fact that employers are less willing to provide casual employees with training opportunities. At the same time casual employees are also less willing to participate in training, especially where skills developed in training are not easily transferred across enterprises and occupations. The casualisation of employment in some

Australian industries and occupations has the potential dramatically to alter apprentice and trainee employment and training.

Gender and employment

There has also been an uneven distribution of people obtaining full-time and part-time positions by gender. In 1997–98 male full-time employment stood at 88 per cent while female full-time employment stood at 56.7 per cent.

Table 6.5: Employed persons—full-time and part-time workers, by age 1997–98 annual average (a) ('000s)

	15–19		20–24		15–64	
	Male	Female	Male	Female	Male	Female
Full-time	145.8	77.2	420.6	307.7	4188.2	2072.5
Part-time	156.5	218.6	96.0	150.0	537.0	1567.1
Total	**302.3**	**295.8**	**516.6**	**457.7**	**4725.2**	**3639.6**

Note: (a)=annual average based on monthly data.
Source: ABS 1999, *Australia now: A statistical profile—labour employment.*

For males, part-time work is most prevalent amongst those aged 15 to 24 years, and those aged 55 years and over. For females, the incidence of part-time employment is spread across all age groups, with workers aged 20 to 34 years being most likely to be employed in full-time positions.

Because of the nature of employment and industrial growth in Australia over the last decade, it has been estimated that almost 60 per cent of jobs created in this time have been filled by females. This is supported by information provided in table 6.5. Other groups likely to benefit from growth in part-time employment are younger workers. Part-time employment accounts for 62 per cent of total employment of those people aged 15 to 19 years. Younger workers are also likely to combine part-time work commitments with those of study.

Table 6.6: Employed persons—full time and part-time workers, by age 1997–98 (%)

	15–19			20–24			15–64		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Full-time	48.2	26.1	37.3	81.4	67.2	74.8	88.6	56.9	74.8
Part-time	51.8	73.9	62.7	18.6	32.8	25.2	11.4	43.1	25.2

Source: ABS 1999, *Australia now: A statistical profile—labour employment.*

Table 6.6 shows that by the time the population reaches the 20 to 24 years age bracket, they have already reached the average distribution of employment between full-time and part-time employment. Interestingly for the 20 to 24 year age bracket, the gender differences—where males dominate full-time and females dominate part-time employment—have already emerged. Male part-time employment is 64 per cent lower for males aged 20 to 24 years than for those aged 15 to 19 years.

Total unemployment levels

The final aspect of the labour market that needs to be considered is the unemployment level. Growth in employment has seen a decline in unemployment levels, with unemployment falling from 750 000 to 700 000 in the last two years. Similarly, over the same period the unemployment rate has declined from 8.1 per cent to 7.4 per cent.

Econtech (1999, p.13) forecasts that the unemployment rate is expected to increase slightly to between 7.5 and 7.75 per cent until 2000–01, before falling back to around 7 per cent in 2001–02.

Having considered the total unemployment rate of the economy, it is important that the rates of unemployment for those aged 15 to 24 years are examined independently.

In trend terms, the teenage full-time unemployment rate peaked in June 1992 at 34.1 per cent. The rate remained above 30 per cent until the second half of 1994, when the trend fell sharply, then remained relatively steady between 27 per cent and 29 per cent. The trend rate stood at 28.1 per cent in June 1998, representing 96 300 teenagers seeking full-time work, out of a full-time teenage labour force of 306 900.

The teenage full-time unemployment rate is sometimes misunderstood. For example, a rate of 28 per cent might be interpreted to mean that approximately one in four teenagers are unemployed. Rather, this measure indicates that approximately one in four of the teenage full-time labour force is unemployed. In fact, the number of full-time unemployed contributing to this rate represents only about one in 16 of all teenagers.

Changes in numbers of youth seeking employment can be attributed to a range of influences including:

- changes to retention rates in post-compulsory education
- more effective school-to-work transition pathways
- increased levels of youth employment initiatives and promotion programs

Summary

This chapter has shown that the Australian population is ageing and people aged 15 to 24 years as a percentage of the working-age population are declining.

In 1998 only a small proportion of young people, 16.4 per cent of 15 to 19 year olds, were full-time employees. More than twice as many males as females are employed full time.

Australian employment

The distribution of Australia's labour force among industries and occupations has partly evolved in response to industrial and technological developments, and trade and political influence. In this section, changes to the labour force composition will be examined.

Size of Australian firms

The nature and extent of opportunities for apprentices and trainees in Australia is dependent upon the nature of employers and enterprise characteristics.

Table 7.1 shows the numbers of Australian enterprises by size of employment in the ten years to 1997. Over this period the numbers of non-agricultural businesses in Australia increased by an average rate of 3.2 per cent per annum. Changes in the number of people employed across all enterprise sizes reflected changes in the numbers of enterprises within the groups.

Table 7.1: Number of enterprises by employment category(a)

Employment category	1996–97 ('000s)	Average annual change 1986–87 through 1996–97
Non-employing	409.1	2.1
1–9 employees	439.3	4.5
10–19 employees	46.1	2.3
20–99 employees	29.1	2.1
100+ employees	5.9	2.3
Total	**929.5**	**3.2**

Note: (a) excludes public trading companies and government entities, and businesses in agriculture forestry and fishing industries.
Source: ABS 1999, *Australia now: A statistical profile—labour force.*

Enterprises employing between one and nine employees have been those which have increased at the fastest rate of all enterprises. Enterprises employing between one and nine employees increased at an annual average rate of 4.5 per cent between 1986–87 and 1996–97, a rate 2.2 per cent faster than any other employment category.

> *The growing importance of smaller enterprises is related to shifts in industry composition, as large manufacturing plants, the public sector and electricity, gas and water utilities 'downsize'* (Waterhouse et al. 1999, p.8).

The small enterprises, those which have increased at the fastest rate, are less likely than larger enterprises to be able to afford the time or expense involved in employing and supervising an apprentice or trainee.

The relationship between the size of enterprises and their propensity to employ and train an apprentice or trainee is beyond the scope of this study. However, it is assumed that as the enterprise size increases, so does the propensity of the enterprise to employ an apprentice or trainee. This assumption is supported by the data contained in table 7.2, which show the relationship between enterprise size and training expenditure.

Table 7.2: Training expenditure by enterprise size, July–September 1996

		Number of employees			
	Unit	<19	20–99	100+	**Total**
Total expenditure	$m	115	168.4	895.4	**1178.8**
Training expenditure as % gross wages and salaries	%	1.2	1.9	3.2	**2.5**
Expenditure per employee	$	71.3	135.8	255.6	**185.5**
Training per employee	hours	2.4	3.8	6.5	**4.9**

Source: ABS 1997, *Employer training expenditure*, Cat no. 6353.0, AGPS, Canberra.

Large enterprises spend more time, money and a greater proportion of gross wages and salaries on training than smaller enterprises. Enterprises employing 100 or more employees were shown by the ABS (1997) to spend 3.6 times more per employee on training than those enterprises with less than 19 employees.

The data clearly show there is a significantly higher likelihood of obtaining enterprise-provided training when employed by a larger enterprise. In light of the data presented regarding recent developments in the size of Australian enterprises, the opportunities available for apprentice and trainee training would reasonably be expected to decline.

Industry employment

In recent years there have been significant changes in Australia's industrial profile and emphasis. Agriculture and manufacturing industries have declined in importance as employment providers, while service-oriented industries have blossomed. Employment in service industries has accounted for most of the employment growth in Australia over the last decade—advanced countries have seen a common expansion of services. The Department of Industry, Science and Tourism (1997) estimated that service employment accounted for approximately 80 per cent of total employment in Australia.

The importance of services to employment is emphasised by the observation of Hall, who noted:

> *The transition of economic production away from manufacturing goods to the output of services and information means that between 65 and 75 per cent of all employment in advanced countries now involves no handling of goods* (Hall 1995, p.12).

It is agreed that, in advanced countries at least, services have become an increasingly dominant sector of employment. However, there has been significant variation among industries in the annual average rates of employment growth. Manufacturing, electricity, gas and water supply, communication services and government administration and defence are all industries that experienced reductions in employment share between 1997 and 1998.

Figure 7.1: Annual rate of employment growth by industry division (% change May 1997–May 1998)

Source: ABS 1998, *Labour force, Australia*, May, Cat no. 6203.0, AGPS, Canberra.

Murphy model forecasts (1998) predict that those industries that experienced declines in employment share between 1997 and 1998 will continue to lose ground through to 2000–01. Education is expected to join these industries on a downward employment share slide.

Table 7.3 shows all industries and the forecast of the extent of their employment changes until 2000–01.

Table 7.3: Employment forecast by industry division 1997–98 to 2000–01

Industry division	Average annual employment change	Share total employment % 1997–98	Share total employment % 2000–01
Agriculture, forestry, and fishing	0.02	5.12	4.88
Mining	1.74	0.98	0.98
Manufacturing	0.56	13.16	12.74
Electricity, gas and water	-4.20	0.76	.63
Construction	4.22	7.01	7.55
Wholesale trade	0.93	5.85	5.73
Retail trade	0.56	14.61	14.15
Accommodation, cafes and restaurants	5.48	4.74	5.29
Transport and storage	0.34	4.62	4.44
Communication services	-0.46	1.74	1.64
Finance and insurance	1.30	3.66	3.63
Property and business services	5.13	10.50	11.62
Government administration and defence	-0.25	4.65	4.40
Education	-.90	6.85	6.34
Health and community services	2.14	9.38	9.52
Cultural and recreational services	1.17	2.38	2.35
Personal and other services	2.82	3.98	4.12

Source: Murphy model forecast 1998.

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It is likely that those occupations concentrated in the industries expected to maintain or increase their employment share will provide the greatest amount of training opportunities for apprentices and trainees. Data in table 7.3 show that service-oriented industries, such as accommodation, cafes and restaurants, and property and business services, are forecast to experience the greatest increases in percentage share of employment of any industries. Production and manufacturing industries—those industries traditionally providing significant employment opportunities to apprentices and trainees—are forecast to experience stagnant or declining employment shares.

The shifting employment by industry is only one factor that will affect the extent of opportunities for apprentices and trainees accessing training. The level of capitalisation, the integration of technology into productive processes, and productivity growth will all have effects on the level of employment and training opportunities by industry.

ABS data have shown that employment growth has been, and is forecast to remain, strongest in industries in which female employment is dominant, or the ratio of female to male employment reasonably reflects female labour force participation. The same observation is also likely to hold true for occupations. Industries with strongest employment growth have expanded partly because of their service orientation, and partly due to the flexible use of employment in part-time and casual employment.

Occupational employment

It is possible that those occupations which cross multiple industries—such as computer professionals—may experience across-the-board employment growth despite forecasted industrial employment share declines.

In this section, the effects of the occupational composition of industries are considered in relation to the employment and training opportunities that are forecast to be available for each occupation.

Occupational employment is affected by three primary factors:

- industry occupational share effects (For example, the number of shop managers in retail when compared to hospitality)
- industry and occupational productivity (The productive ability of capital intensive industries such as manufacturing is greater than those which are labour intensive such as personal services)
- occupational employment structures and flexibility (Unionism and industrial relations reforms will have different effects on industries and occupations. Trade-based industry occupations are less likely than service-based occupations to have flexible employment conditions)

A key factor, which has an effect on productivity and the extent of employment opportunities, is the level of technological uptake by enterprises that employ particular occupations. Some occupations are superseded by technology (e.g. robotics in automotive manufacturing), while others are promoted by technological innovations (e.g. computer professionals).

When occupations are not industry dependent, they are able to insulate themselves and their workers against the negative effects of productivity and technology 'shocks' which can reduce the level of employment.

Australian occupations

The ABS has developed the Australian Standard Classification of Occupations (ASCO). ASCO is a skill-based classification system which groups occupations that require the completion of

similar tasks or jobs. ASCO also includes a specialist skill component that considers factors such as:

- field of knowledge required
- tools and equipment used
- materials worked upon
- goods and services produced

A fundamental understanding of ASCO and its classification system is required if accurate and informative analyses of occupational trends are to be undertaken.

Table 7.4 shows that professionals and intermediate clerical sales and service workers have dominated employment in Australia between 1995 and 1998. These two occupational groups account for approximately 3 million of the 8.5 million jobs in the Australian economy. Notable declines in the total employment levels were experienced in tradespersons and related workers and the intermediate production and transport workers between 1995 and 1998.

Table 7.4: Employment by occupation, 1995–96 to 1997–98 ('000s)

Occupation	1995–96	1996–97	1997–98
Managers and Administrators	612	622	646
Professionals	1421	1436	1485
Associate Professionals	895	883	891
Trades and Related Workers	1182	1142	1128
Advanced Clerical, Sales and Service	406	310	384
Intermediate Clerical, Sales and Service	1391	1406	1454
Intermediate Production and Transport	832	797	780
Elementary Clerical, Sales and Service	841	856	892
Labourers and Related Workers	875	860	863
TOTAL	**8455**	**8392**	**8522**

Source: ABS 1998, *Labour force, Australia*, Cat no. 6203.0, AGPS, Canberra.

Table 7.4 shows that intermediate production and transport workers lost more than 51 000 jobs, and trades and related workers lost in excess of 54 000 jobs over a two-year period. These declines in employment by occupation were experienced despite an increase of almost 67 000 jobs for the economy as a whole. Only four of the nine occupational classifications shown in table 7.4 experienced growth in employment numbers for the period.

Occupational forecasting

What jobs will Australians be performing in the future? In which occupations do employment prospects lie? Do we have enough people with the 'right' skills and qualifications? These are three major questions that are continually faced by policy-makers.

Employment prospects for occupations in coming years will depend on two main factors: firstly, on the distribution of the occupational employment by industry sector and, secondly, on the skill level of the occupation.

Having examined the reasons for changes in the occupational employment levels, and shown recent trends in the levels of occupational employment, we now turn to the Murphy model forecasts by occupation.

The Murphy model is a large-scale, disaggregated-level model with dynamic macro-economic sectors. It looks beyond the current trends in occupational and industrial composition. The model meets the key forecasting criteria of:

- separate parts being consistent over the whole model
- making use of informative economic theory
- using market data to establish model parameters
- independent researchers being able to replicate its results

It should be remembered, however, that all models are approximations of reality. Computational considerations dictate the need to trade-off between the number of relationships that can be modeled and the complexity of behaviour that can be modeled. In this report macro-economic forecasts prepared by Murphy and Douglas (1998) are used as the figures for future industrial and occupational employment. Despite the approximations necessary for modeling, it is accepted by Burns and Shanahan (1999, p.5) that such forecast data are useful because they improve the decision-making of all current and future labour market participants, especially where a long lead-time for skill or qualification acquisition is required. The current patterns of occupational composition are a useful but insufficient guide to forecast the occupations where employment will be created or lost in future years.

Murphy model forecasts of occupational employment are contained in table 7.5. The data show that, between 1997–98 and 2000–01, four occupations are expected to maintain their employment levels, three are expected to experience declining employment, and only two are expected to expand employment.

Table 7.5: Murphy model forecasts of employment by occupation, 1997–98 to 2000–01 ('000s)

Occupation	1997–98	2000–01	Forecast change
Managers and Administrators	643.8	684.8	41.0
Professionals	1493.9	1590.7	96.8
Associate Professionals	893.3	919.2	25.9
Trades and Related Workers	1154.5	1205.6	51.1
Advanced Clerical, Sales and Service	381.9	399.2	17.3
Intermediate Clerical, Sales and Service	1454.4	1534.0	79.6
Intermediate Production and Transport	769.0	797.1	28.1
Elementary Clerical, Sales and Service	877.0	943.5	66.5
Labourers and Related Workers	853.6	877.9	24.3
TOTAL	**8521.4**	**8952**	**430.6**

Source: Murphy model forecasts 1998.

Data from table 7.5 show that all occupations are expected to experience gains in real numbers of people employed with some occupations (e.g. elementary clerical, sales and service) expected to increase employment at a more rapid rate than others. Professionals are expected to experience the most significant gains in total employment of any occupational group.

> *The most obvious change in workplaces is a move away from specialised jobs and separate work functions towards more broadly-defined work roles... and shared responsibility for planning and decision making* (Mayer Committee 1992).

Data from table 7.5 do not support claims which have been made by the Organisation for Economic Co-operation and Development (OECD 1994) regarding the 'disappearing middle' occupations in Australia's, and indeed the world's, labour force. The OECD hypothesis has been developed on an apparent polarisation of occupational employment. It is suggested that the bulk of recent employment growth can be attributed to high-skilled, high-paid occupations such as professionals and low-skilled, low-paid occupations such as elementary clerical, sales and services. The data show that this not the case, nor is it expected to be so. The Murphy forecasts (1998) show that professionals and intermediate clerical, sales and service workers are expected to retain their dominant employment shares. Rather than the 'middle occupations' disappearing, it would appear that they are absorbing many of the low-skilled

employment opportunities. This point leads effectively into consideration of the role being played by qualifications in Australian employment.

Qualifications

In recent years, the labour market has seen an increase in the numbers of people holding educational qualifications at increasingly higher levels of achievement. Post-compulsory qualifications are becoming a requirement for successful entry into, and participation in, the labour force. In some cases these qualifications are acting as quasi-gatekeepers to control entry into occupations. Although this has nearly always been the case for professional and trade-based occupations, it is becoming more evident across the entire labour market. In 1996 the ABS Census of Population and Housing data show that almost two-thirds of the labour force participants between the ages of 25 and 64 years held at least upper secondary qualifications. Upper secondary education is associated with individuals' participation in the labour force. The ABS data also show that 41.5 per cent of people employed in Australia held some form of post-school qualification.

Table 7.6: Population and labour force by education (25 to 64 years old), 1996

Education	Less than upper secondary	Upper secondary	Non-university tertiary	University	Total
Population	43	32	10	15	100
Labour force	37	35	11	17	100

Source: OECD, Education Database.

This slight variation suggests that only having achieved less than upper secondary education is a hindrance to entering the labour force. However, the proportion of those with less than upper secondary education was slightly lower (6%) in the labour force than that for the population as a whole. Conversely, higher level educational achievements are relatively over-represented in the labour force when compared to their levels in the total population.

These figures do not include data for people aged 15 to 24 years for various reasons discussed previously. Reasons include the following:

- Young people have skewed participation rates in education and employment. Many young people support themselves through their education by working at the same time.
- In recent years an increasing percentage of people in this age bracket have remained in education.
- Young people continuing with post-compulsory education often support themselves during their studies with part-time employment.

Qualifications, which themselves are not necessarily required to complete a job effectively, have become associated with occupations which previously have not required any qualification or experience. Such credentialism can have significant effects on the extent of training opportunities made available to apprentices and trainees and the characteristics of people able to benefit from these opportunities.

Table 7.7: Educational attainment of employed persons by occupation and type of post-compulsory qualification at 1996 Census

ASCO code and occupation	Proportion of workforce with (%)								
	Degree or higher	Diploma	Associate diploma	Skilled vocational qualification	Basic vocational qualification	Sub-total with qualification	No qualification	Not stated/ unknown	Total
1000 Managers & Administrators	18.9	5.2	3.6	16.0	3.4	45.0	46.7	8.3	100.0
2000 Professionals	68.1	4.3	3.6	2.8	2.1	80.8	15.8	3.3	100.0
3000 Associate Professionals	11.8	4.2	6.9	14.0	6.6	43.5	48.7	7.8	100.0
4000 Tradespersons & Related Wkrs	2.6	1.5	4.7	51.2	2.4	62.4	31.2	6.4	100.0
5000 Advanced Clerical & Service Wkrs	25.9	3.2	13.0	13.0	0.0	55.1	41.6	3.2	100.0
6000 Intermediate Clerical, Sales & Service Wkrs	6.6	3.1	3.9	6.3	9.5	29.4	59.3	11.3	100.0
7000 Intermediate Production & Transport Wkrs	1.4	0.8	1.1	14.6	2.5	20.5	71.3	8.2	100.0
8000 Elementary Clerical, Sales & Service Wkrs	3.7	1.3	1.9	4.1	3.4	14.3	78.9	6.8	100.0
9000 Labourers & Related Wkrs	1.6	0.7	0.8	7.2	1.3	11.6	79.7	8.7	100.0
Not stated	4.2	1.7	1.2	7.3	1.6	15.9	64.1	20.0	100.0
Total Australian workforce	15.5	4.5	3.6	14.2	3.6	41.5	51.3	7.3	100.0

Source: ABS, Census of population and housing, 1996.

Table 7.7 shows post-compulsory education is important to people in the Australian labour force. In 1996, 41.5 per cent of the Australian labour force had completed some form of post-compulsory education. Vocational qualifications were the most commonly held qualification by persons in the Australian labour force. In fact, 42 per cent of people with a post-compulsory qualification hold a vocational qualification, 37 per cent hold a degree or higher qualification and the remaining 21 per cent have obtained diplomas. Of those people with vocational qualifications, skilled vocational qualifications are four times more common than basic vocational qualifications.

Seven of the nine occupational groups reported in table 6.6 show vocational qualifications are the dominant post-compulsory qualification. Tradespersons and related workers stand out as the occupational grouping which has the greatest percentage of workers with skilled vocational qualifications. In 1996, 53.6 per cent of people employed as tradespersons and related workers held a vocational qualification, and 51.2 per cent of these were skilled vocational qualifications.

Summary

The changes introduced into the new apprenticeship system have enabled all occupations and industries creating employment in Australia to participate in the development of a qualified labour force. A system of employment-based training, flexible enough to accommodate the needs of emerging service-based occupations and industries, has been developed from its tradition of trade-based qualifications provision. While it is important that effort focusses on the development of emerging occupations and industries, trade-based industries should not be neglected. Not only do these industries and occupations provide knowledge and experience of successfully implementing employment-based training, it is forecast they will remain as stable contributors to the national employment-based training efforts.

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Research results

In previous chapters, changes to the Australian labour force have been discussed. The current labour force is undergoing some fundamental changes, with employment opportunities increasingly being found in the service sector, and a trend towards employment which is not full time or permanent.

If the training system is to provide an entry point to the labour market for young people, it is essential that an effort be made to match skills gained by individuals undertaking an apprentice or traineeship with those demanded by industry. In this section the trends in apprentice and trainee numbers relative to employment by occupation are presented, as are forecasts of apprentice and trainee numbers based on a range of assumptions of this ratio.

The data presented in this section and the forecasts derived from the analysis are based on data from the 1997–98 contract of training collection and the Econtech employment forecasts presented in appendices C and D. Any changes in training or economic policies since the time at which these forecasts were made must be considered when interpreting the data.

Apprentices, trainees and total employment

High-level disaggregated ABS occupational data were combined with data from the national apprentice and trainee statistics collection, to determine what is referred to in this report as the *contracted employment* (C:E) ratio. This ratio was derived for 1995–96, 1996–97 and 1997–98 for each of the occupational groups available from the national apprentice and traineeship statistics. The C:E ratio provides:

- an indication of the extent to which enterprises that employ people in various occupations utilise the apprentice and traineeship system
- a description of changes in the extent of occupational participation in apprentice and traineeship training
- a base figure which can be utilised with macro-economic occupational forecasts to model scenarios of future apprentice and trainee numbers

C:E ratios for Australian occupations were derived using the commencement and re-commencement data contained in the national contract of training statistics. Disaggregated data provided information at one, two and three-unit ASCO classifications. Comparison between the levels showed considerable variation in the occupation-specific trends within broader occupational classifications.

The principal use of the C:E ratio has been in determining forecasts for potential scenarios. By establishing a measure of how the many occupations—or the employers of people in occupations—utilise the apprentice and traineeship systems, forecasts can be related to other macro-economic forecasts of occupational and economy-wide trends.

The results from the research are divided into three different sections. Each section focusses on a different level of aggregation, beginning with the most highly aggregated data and concluding with the most highly disaggregated.

This analysis will allow course planning and the allocation of resources to training to take place within the framework of a methodology that can be used on an ongoing basis.

Scenarios used in forecasts

In this report there are three C:E scenarios modeled, each of which provides output for the 2000–01 financial year. The scenarios used to derive C:E forecasts for 2000–01 are combined with employment data to calculate actual numbers of contract of training commencements. Details of these calculations are found throughout this section and in the appendices.

Scenario 1 is a constant measure, in which the C:E ratio is projected to remain at 1997–98 at least until 2000–01. That is, the C:E ratio from 1997–98 for each occupation is related to the employment forecasts for 2000–01 to derive contract of training commencement forecasts.

Scenario 2 is an extrapolation of the current trend data. The trend derived is the average growth experienced between 1995–96 and 1997–98 extrapolated for three years to 2000–01. Given the expansion of contract of training commencements following the introduction of the new apprenticeship training scheme, it is unlikely that this scenario is a realistic projection. Scenario 2 serves to show what is considered in the context of this study to be the maximum growth potential for contract of training commencements.

Scenario 3 draws on the macro-economic projections of employment growth to model the impact of economy-wide growth on the C:E ratio. The key element for deriving scenario 3 is the forecast annual employment growth by occupation developed through the macro-economic modeling. That is, the average forecast growth rate for each occupation is related to the C:E ratio for 1997–98 to derive the C:E ratio for 2000–01.

All three scenarios utilise the expertise of the macro-economic forecasting by including the employment forecasts by occupation. However, of the three scenarios, the third is preferred as a means of deriving the 2000–01 C:E ratio and forecasting contract of training commencements. Preference for scenario 3 stems from the fact that this scenario uses the employment occupational forecasts and relates these data to current occupational employment data.

ASCO major occupations

In this section the historical changes which have been experienced in the C:E ratio by occupation are examined. The 986 occupations defined by ASCO classifications are combined in table 8.1 under nine major groupings. While the data suffer from being highly aggregated, they do provide an overview of those occupations which have and continue to utilise contracts of training to develop skills for people employed in various occupations. Professionals are also prominent in the data presented in table 8.1—not because of their use of contracts of training, but the lack of uptake of contracts of training by people in these occupations.

Table 8.1: Contracts to employment ratio (C:E ratio) 1995–96 to 1997–98 (%)

	Occupation ASCO major level	1995–96 C:E ratio	1996–97 C:E ratio	1997–98 C:E ratio
1	Managers & Administrators	0.0025	0.0034	0.0032
2	Professionals	0.0002	0.0003	0.0012
3	Associate Professionals	0.0030	0.0053	0.0081
4	Trades persons & Related Workers	0.0436	0.0431	0.0428
5	Advanced Clerical, Sales & Service Workers	0.0006	0.0007	0.0010
6	Intermediate Clerical, Sales & Service Workers	0.0135	0.0199	0.0267
7	Intermediate Production & Transport Workers	0.0022	0.0030	0.0052
8	Elementary Clerical, Sales & Service Workers	0.0072	0.0099	0.0143
9	Labourers & Related Workers	0.0067	0.0116	0.0191
	Total	0.0105	0.0126	0.0155

Source: National apprentice and trainee statistics, ABS unpublished data based on 1996 Census benchmarks.

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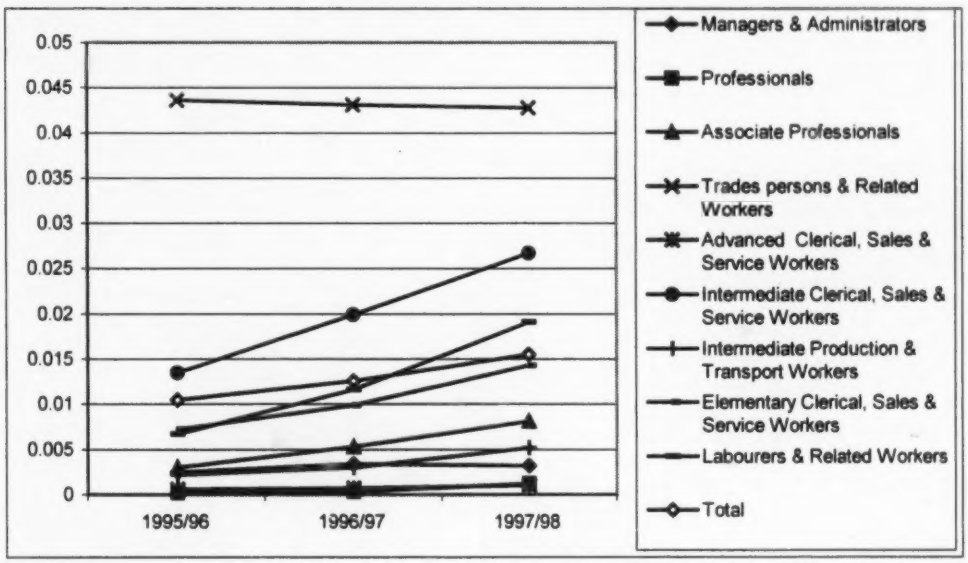
Recent increases in the numbers of people undertaking contracts of training have been translated at the ASCO major level to a 0.005 increase in the total C:E ratio. Closer examination of data in table 8.1 indicates that there have been considerable shifts in support for the contracts of training by occupational classification in the past four years. Interestingly, managers and administrators were the only occupation that experienced a reduction in the C:E ratio for the period, with an 0.02 per cent decline between 1997 and 1998. Increases in C:E ratios ranged between a low of 0.04 per cent increase for advanced clerical, sales and service workers, to a high of 1.24 per cent increase for the labourers and related workers. Figure 8.1 provides a graphical description of these major trends.

Figure 8.1: Commencements to employment ratio, by occupation 1996–1998



Source: National apprentice and trainee statistics, ABS unpublished data based on 1996 Census benchmarks.

Figure 8.1 represents the C:E ratio by occupation between 1995–96 and 1997–98. Only four of the nine occupational classifications had more than 1 per cent of their employees on contracts of training at any time between 1995–96 and 1997–98. The economy-wide employment of people on contracts of training ranged between 1.03 per cent in 1995–96 and 1.54 per cent in 1997–98.

As noted earlier, these aggregated figures hide the considerable variation which exists within the occupational groupings which can be examined using more highly detailed data from the ASCO and the national apprentice and trainee statistics. Making decisions based on results derived from data at this aggregate level, however, may result in inappropriate developments in the Australian apprentice and trainee system.

Having considered the events of the present and recent past, what can be said about the likely future?

Table 8.2: Scenario modeling, C:E ratios and contract of training commencements 2000–01

ASCO code	1997–98 C:E ratio	Employment forecast	2000–01 C:E ratio 1	C:E ratio 2	C:E ratio 3	Scenario 1 Contracts commencing	Scenario 2 Contracts commencing	Scenario 3 Contracts commencing
1 Managers & Administrators	0.0032	684757	0.0032	0.0043	0.0034	2207	2925	2345
2 Professionals	0.0012	1590711	0.0012	0.0026	0.0012	1852	4118	1969
3 Associate Professionals	0.0081	919152	0.0081	0.0157	0.0083	7421	14445	7634
4 Tradespersons & Related Workers	0.0428	1205573	0.0428	0.0416	0.0447	51588	50154	53836
5 Adv. Clerical & Service Wkrs	0.0010	399221	0.0010	0.0016	0.0010	387	623	404
6 Intermediate Clerical, Sales & Service Workers	0.0267	1534028	0.0267	0.0465	0.0281	40976	71314	43180
7 Intermediate Production & Transport Workers	0.0052	797081	0.0052	0.0096	0.0053	4110	7670	4258
8 Elementary Clerical, Sales & Service Workers	0.0143	943539	0.0143	0.0251	0.0153	13488	23700	14473
9 Labourers & Related Workers	0.0191	877940	0.0191	0.0377	0.0196	16768	33092	17242
Total	0.0155	8952002	0.0155	0.0230		138797	208042	145341

Note: These forecasts are based on data from the 1997–98 Contract of training collection and the Econtech employment forecasts presented in appendices C and D. Any changes in policies or related conditions which influence employment and training since the time at which these forecasts were made must be considered when analysing the accuracy of forecasts presented.

Source: National apprentice and trainee statistics, ABS unpublished data based on 1996 Census benchmarks, Murphy and Douglas 1998.

The conditions used to model each of the scenarios were outlined at the beginning of this chapter. The range of the forecast apprentice and trainee commencements based on the range of scenarios is from 208 000 to 138 700—a difference of 70 000 contracts of training. Scenario 3, based on the macro-economic model forecasts of employment by occupation, predicts that in 2000–01 contract of training commencements will reach 145 0000. Such a figure is not unlikely, with 1997–98 commencements slightly above 130 000. While data in table 8.2 do not provide great detail regarding the components of training, they do serve as a guide to the range of future numbers of people who could commence a contract of training.

Recent trends in ASCO sub-major occupations

Table 8.3 contains the C:E ratio for occupations at ASCO level 2. Level 2 ASCO are sub-divisions of the occupational groups contained in level 1 and are distinguished from other sub-major groups on the basis of broadly stated skill specialisation. There are 35 sub-divisions that describe the 986 occupations. Each sub-division represents an average of 28 occupations.

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Table 8.3: Contracts to employment ratio (C:E ratio) 1995–96 to 1997–98 (%)

ASCO code	1995–96C:E ratio	1996–97C:E ratio	1997–98C:E ratio
11 Generalist Managers	0.0000	0.0000	0.0000
12 Specialist Managers	0.0032	0.0053	0.0054
13 Farmers & Farm Managers	0.0031	0.0029	0.0023
21 Science, Building & Engineering Prof.	0.0013	0.0019	0.0032
22 Business & Information Prof.	0.0003	0.0001	0.0001
23 Health Prof.	0.0000	0.0004	0.0033
24 Education Professionals	0.0000	0.0000	0.0004
25 Social, Arts & Miscellaneous Professionals	0.0001	0.0001	0.0002
31 Science, Engineering & Related Assoc. Professionals	0.0088	0.0143	0.0190
32 Business & Administration Associate Professionals	0.0034	0.0078	0.0169
33 Managing Supervisors (Sales & Service)	0.0000	0.0000	0.0000
34 Health & Welfare Associate Professionals	0.0016	0.0017	0.0017
39 Other Associate Professionals	0.0067	0.0097	0.0060
41 Mechanical & Fabricated Engineering Tradespersons	0.0358	0.0326	0.0309
42 Automotive Tradespersons	0.0674	0.0649	0.0554
43 Electrical & Electronics Tradespersons	0.0324	0.0321	0.0329
44 Construction Tradespersons	0.0337	0.0351	0.0411
45 Food Tradespersons	0.0969	0.1032	0.0992
46 Skilled Agricultural & Horticultural Workers	0.0171	0.0155	0.0170
49 Other Tradespersons & Related Workers	0.0427	0.0419	0.0424
51 Secretaries & Personal Assistants	0.0000	0.0000	0.0000
59 Other Advanced Clerical & Service Workers	0.0015	0.0017	0.0021
61 Intermediate Clerical Workers	0.0123	0.0139	0.0152
62 Intermediate Sales & Related Workers	0.0450	0.0690	0.0791
63 Intermediate Service Workers	0.0062	0.0169	0.0318
71 Intermediate Plant Operators	0.0016	0.0020	0.0016
72 Intermediate Machine Operators	0.0022	0.0035	0.0052
73 Road & Rail Transport Drivers	0.0010	0.0004	0.0029
79 Other Int. Production & Transport Workers	0.0040	0.0066	0.0108
81 Elementary Clerks	0.0000	0.0000	0.0003
82 Elementary Sales Workers	0.0093	0.0125	0.0176
83 Elementary Service Workers	0.0002	0.0011	0.0020
91 Cleaners	0.0005	0.0007	0.0033
92 Factory Labourers	0.0139	0.0230	0.0356
99 Other Labourers & Related Workers	0.0059	0.0113	0.0178
Total	0.0105	0.0126	0.0154

Source: National apprentice and trainee statistics, ABS unpublished data based on 1996 Census benchmarks.

It is clear from table 8.3 that considerable variation exists between the occupations which use the apprentice and trainee system to provide training. The C:E ratio varies over a greater range than the aggregated ASCO major-level data shown in table 8.1. The two-unit ASCO C:E ratio varies between 0.1032 for food tradespersons in 1996–97 and nil. Six of the 35 occupational sub-divisions recorded a nil C:E ratio between 1995–96 and 1997–98. Because of the extensive use of contracted employment for chefs and kitchen-hands, the food tradespersons sub-division is likely to maintain a strong C:E ratio.

However, despite the dominance of trades and related occupations in the use of contracts of training, these are not the occupations which have experienced the greatest gains in C:E ratios in recent years. In fact, four of the seven tradespersons and related worker sub-divisions experienced declines in the C:E ratio of their workforces between 1995–96 and 1997–98. The occupational sub-division that experienced the greatest increase in C:E ratio for the period was the intermediate sales and related workers grouping which had an increase of 0.0341 between 1995–96 and 1997–98.

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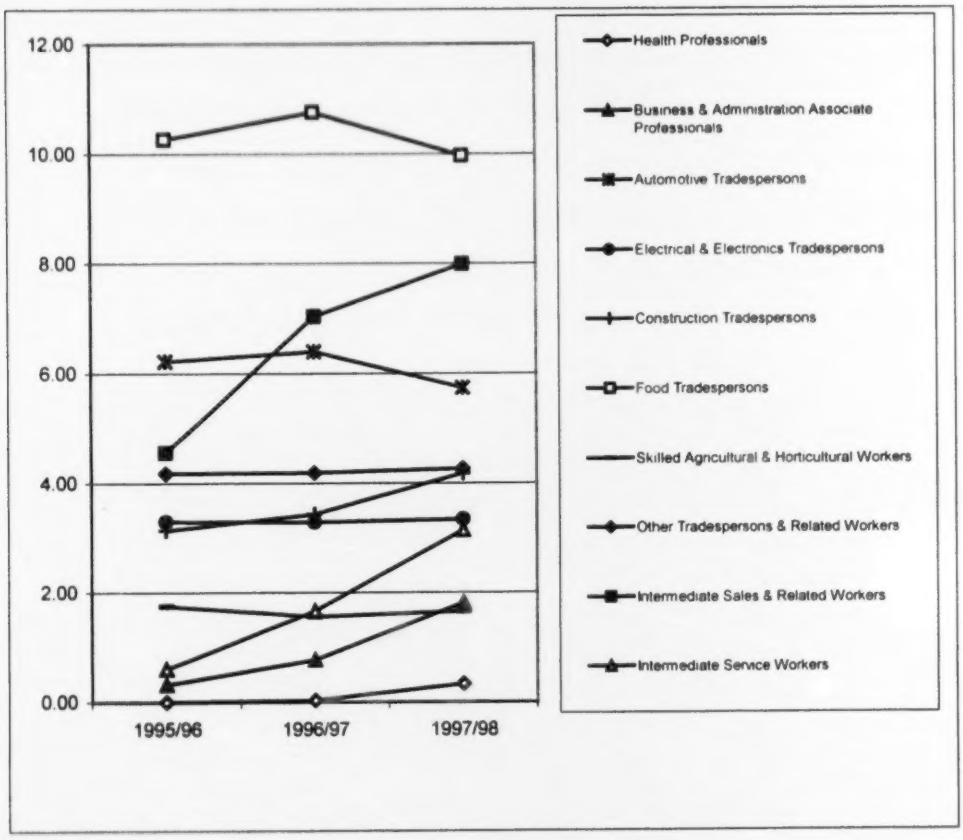
Table 8.4: Top ten ASCO occupational sub-divisions, by C:E ratio 1997–98

ASCO code	1995–96 C:E ratio	1996–97 C:E ratio	1997–98 C:E ratio
45 Food Tradespersons	**0.0969**	**0.1032**	**0.0992**
62 Intermediate Sales & Related Workers	0.0450	0.0690	0.0791
42 Automotive Tradespersons	**0.0674**	**0.0649**	**0.0554**
49 Other Tradespersons & Related Workers	0.0427	0.0419	0.0424
44 Construction Tradespersons	**0.0337**	**0.0351**	**0.0411**
92 Factory Labourers	0.0139	0.0230	0.0356
43 Electrical & Electronics Tradespersons	**0.0324**	**0.0321**	**0.0329**
63 Intermediate Service Workers	0.0062	0.0169	0.0318
41 Mechanical & Fabricated Eng. Tpersons	**0.0358**	**0.0326**	**0.0309**
31 Science, Engineering & Related Assoc. Prof	0.0088	0.0143	0.0190

Source: National apprentice and trainee statistics, ABS unpublished data based on 1996 Census benchmarks.

Table 8.4 shows the extent of the tapering-off by occupational sub-division in the use of training contracts by enterprises employing people in particular occupations. Despite the tapering in the C:E ratios of tradespersons and related workers, six of the seven occupational sub-divisions in this group are found in the top ten of all occupational sub-divisions.

Figure 8.2: Selected occupational sub-divisions, by C:E ratio (1995–96 to 1997–98)



Source: National apprentice and trainee statistics, ABS unpublished data based on 1996 Census benchmarks.

Changes have occurred to a range of occupational sub-divisions over the period from 1995–96 to 1997–98, as shown in figure 8.2. The most prominent feature shown in the figure is the rise in the C:E ratio of the intermediate sales and service workers. This occupational sub–division increased from a level comparable with 'other tradespersons and related workers' in 1995–96 to reach a C:E of almost eight in 1997–98. During the same time, 'other tradespersons and related workers' and 'automotive tradespersons' experienced stagnation and decline in their C:E ratios.

As with the forecasts derived for the ASCO major occupations, forecasts derived at the sub-major level predict an increase in the numbers of contracts of training commenced in 2000–01. The range of forecasts provided by the three scenario modeling is higher than that for the major occupational forecasts, although the difference is negligible. Forecasts of apprentice and trainee commencements in sub-major occupations for 2000–01 range between 138 100 and 207 700 contracts of training. Scenario 3 forecasts approximately 145 000 contract of training commencements to begin in 2000–01.

The sub-major occupational analysis enables the identification of trends in occupational use of contracts of training. Table 8.5 presents the forecast expected number of contract of training commencements by the three scenarios modeled.

Table 8.5: Contracts of training commencements by sub-major occupations by scenario

		2000–01		
ASCO code	Contracts of training commenced 1997–98	Scenario 1 Contracts commencing	Scenario 2 Contracts commencing	Scenario 3 Contracts commencing
83 Intermediate Service Workers	14596	16308	35858	17855
82 Elementary Sales Workers	12243	13123	22414	14001
81 Intermediate Clerical Workers	12863	13413	17280	13807
44 Construction Tradespersons	10630	12115	16380	13545
62 Intermediate Sales & Related Workers	9885	10888	17933	11588
45 Food Tradespersons	8463	8813	9121	9109
49 Other Tradespersons & Related Workers	8699	8999	8910	9075
92 Factory Labourers	8286	8347	15993	8497
99 Other Labourers & Related Workers	7282	7576	15192	7753
42 Automotive Tradespersons	7729	7495	5050	7335
43 Electrical & Electronics Tradespersons	5893	6332	6485	6815
41 Mechanical & Fabricated Eng. Tradespersons	6380	6475	4922	6545
32 Business & Administration Associate Prof.	4087	4208	9237	4365
31 Science, Engineering & Related Assoc. Prof.	2432	2605	4715	2735
79 Other Int. Production & Transport Workers	2333	2484	4798	2569

Note: These forecasts are based on data from the 1997–98 Contract of training collection and the Econtech employment forecasts presented in appendices C and D. Any changes in policies or related conditions which influence employment and training since the time at which these forecasts were made must be considered when analysing the accuracy of forecasts presented.

Source: National apprentice and trainee statistics, ABS unpublished data based on 1996 Census benchmarks.

Only five of the 35 occupational sub-major groups are forecast by scenario 3 to have more than 10 000 contract of training commencements in 2000–01. For a complete listing of the forecasts at the sub-major occupational level, refer to appendix B. The data contained in appendix B show the dominance of the 'tradespersons and related workers' in the commencements of contracts of training. Other indications from the analysis include the emerging role of the 'intermediate clerical, sales and service workers'. The emergence of the intermediate clerical occupations has been led by the 'intermediate service workers', which are forecast to continue their emergence and become the dominant occupation in which contracts of training commence. Professional and advanced clerical occupations are two occupational groups which have not contributed significantly to the contract of training commencement figures. These occupations are expected to remain outside the influence of contracts of training, but might well serve as appropriate targets for planning of new training

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packages or modules. The trend towards universities providing vocational training may be able to be used to develop contracted training packages for these occupations.

Recent trends in ASCO minor group occupations

The most disaggregated level at which analysis is undertaken in this project is the ASCO occupational minor groups, level 3. These sub-major groups are distinguished within sub-divided groups on the basis of the degree of skill specialisation required. There are 81 minor groupings representing the 986 occupations, an average of 12 occupations per classification. Analysis and forecasts at the minor group occupational level are presented in appendix D.

Changes, which occurred to the ASCO classifications between 1995–96 and 1996–97, mean that the data collected under these two classifications are not directly comparable. Data manipulations including aggregation from four and six-unit ASCO data were used to overcome some of the issues relating to data comparability. Reclassification by those responsible for reporting contracts of training undertaken was also used to enable the concordance of the 1995–96 data with data collected since this time.

At the ASCO minor group level it is possible to distinguish some of the technological and industrial changes which have affected the number of people commencing contracts of training in particular occupations. 'Printing tradespersons', for example, have declined following the development of computers and the advent of desktop publishing. The emergence of training contracts in non-traditional occupations such as service-based occupations is evident with the increasing numbers of 'miscellaneous specialist managers', 'miscellaneous intermediate service workers' and 'intermediate sales and related workers' commencing contracts of training between 1995–96 and 1997–98. Contracts of training commencements in these three occupations increased from 7 187 (8.3 per cent of total commencements) in 1995–96 to 13 415 (10.3 per cent of total commencements) in 1997–98. Another occupational training feature is the emergence of occupations related to personal services, especially the aged. The occupations of 'miscellaneous health professionals' and 'nursing professionals' have both emerged from nil commencements of contracts of training in 1995–96 to be forecast to account for close to 1000 commencements in 2000–01. 'Carers and aides' have become a significant occupation in terms of contract of training commencements, accounting for 4.8 per cent of the total commencements in 1997–98 alone.

Although the traditional 'trade and related worker' occupations will remain a dominant sector in the use of contracts of training, their dominance is by no means unchallenged. 'Plumbers', 'hairdressers', 'automotive tradespersons' and 'food tradespersons' are forecast to maintain their roles as principal occupations utilising the contracts of training system. Alternative workers undertaking contracts of training are increasingly found in intermediate clerical sales and service occupations.

Occupations and contracts of training

It is apparent from the data in appendix B that contracts of training are being used for an increasing number of occupations. At the most disaggregated level, changes in the numbers of occupations in the contracts of training will be greatest. In this section the trends in occupations at the unit group—there are 340 unit groups—are examined.

Data presented in figure 8.3 show that between 1995–96 and 1997–98 there has been a constant increase in the numbers of occupational classifications at the four-unit ASCO level in the contracts of training commencement data. Considering the peak numbers reported in each of the financial years, there has been an increase of 28 occupations over the two-year period with 16 of these new occupations being reported in the 1997–98 financial year. At its highest point there were a total of 217 occupational classifications at the four-unit level—this represents 64 per cent of all occupations at the ASCO unit-group level.

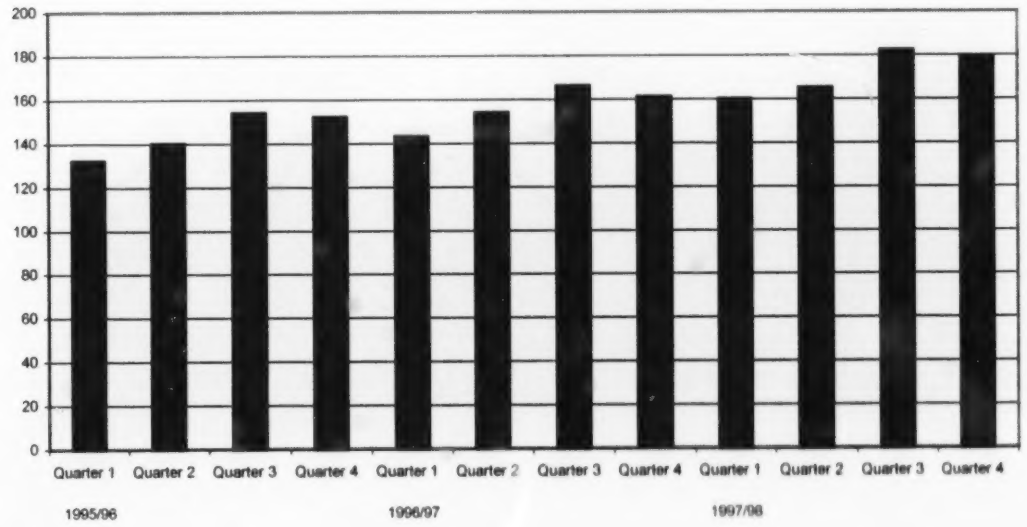
Table 8.6: Top 15 forecast for minor group occupations by contract of training commencements

ASCO code	Contracts of training commenced 1997–98	2000–01 Scenario 1 Contracts commencing	2000–01 Scenario 2 Contracts commencing	2000–01 Scenario 3 Contracts commencing
611 General Clerks	**12128**	**13510**	**14138**	**13525**
821 Sales Assistants	11661	12433	15342	12442
621 Intermediate Sales and Related Workers	**9883**	**10886**	**13233**	**10897**
631 Carers and Aides	6313	8849	13079	8885
451 Food Tradespersons	**8463**	**8813**	**8916**	**8817**
921 Process Workers	8286	8132	10750	8131
421 Automotive Tradespersons	**7715**	**7481**	**6660**	**7479**
441 Structural Construction Tradespersons	6953	7430	8044	7435
431 Electrical and Electronics Tradespersons	**5774**	**6204**	**6296**	**6209**
632 Hospitality Workers	6815	6052	7925	6045
493 Hairdressers	**4967**	**5039**	**4756**	**5039**
992 Agricultural and Horticultural Labourers	4102	4142	5434	4143
329 Miscellaneous Business and Administrative Associate Professionals	**4059**	**4127**	**5769**	**4128**
411 Mechanical Engineering Tradespersons	2942	3039	2774	3040
443 Plumbers	**2349**	**2959**	**3336**	**2966**

NOTE: These forecasts are based on data from the 1997–98 Contract of training collection and the Econtech employment forecasts presented in appendices C and D. Any changes in policies or related conditions which influence employment and training since the time at which these forecasts were made must be considered when analysing the accuracy of forecasts presented.

Source: National apprentice and trainee statistics. ABS unpublished data based on 1996 Census benchmarks.

Figure 8.3: Four-digit ASCO classifications by contract of training commencement 1995–96 to 1997–98



Source: National apprentice and trainee statistics.

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The expansion of the coverage of ASCO classifications by the contracts of training data reflects the expansion of the new apprenticeship training schemes into industries and occupations not previously associated with this method of training. Non-trade occupations are forecast to provide the greatest number of contracts of training commencements in table 8.6.

Apprenticeships and traineeships have traditionally been delivered on a full-time basis. However, part-time traineeships have become increasingly popular, with many industries adopting this training method to suit their flexible labour forces. Introduction of part-time traineeships has seen the emergence of contracts of training commencements in occupations which have previously not had much involvement with contracts of training.

Possibly the most prominent occupations which have emerged into the contract of training system are those related to sales and other services. Associate professionals in business administration have also emerged as a significant contributor to the numbers of people undertaking contracts of training. People employed in these occupations are younger workers with a higher proportion of female employment. If occupations such as sales assistants are able to provide workers with formal qualifications, staff retention rates in these occupations may increase.

While there has been considerable promotion of contracts of training to non-traditional occupations and positions, there has also been an emphasis on the promotion of contracts of training to non-traditional participants. Females and older workers were shown in earlier sections to be participating in an increasing number of contracts of training. Despite the promotion of universal participation, any participatory changes that might occur for females and groups identified as disadvantaged in the labour force may be as a result of changing the emphasis of the occupations in which contracts of training are now available.

Final word

The Australian apprentice and traineeship system has undergone considerable changes over the last decade. The introduction of new apprentice training in 1998 resulted in a boom of employment-based training. There has been an increase in the number of people undertaking training and a diversification of the occupations and industries in which apprenticeships and traineeships are being undertaken. However, not all industries and occupations have experienced an increase in numbers of apprentices and trainees. Those occupations in which apprenticeships and traineeships were available prior to January 1998 showed little variation in commencement numbers but experienced declines in their relative importance in the system as a whole.

In light of the fluctuations in numbers of apprentice and trainee commencements, following the introduction of the new apprenticeship system, it is unsuitable to forecast future commencements of apprentices and trainees based on simple extrapolations of current data. It is necessary to look outside the new apprenticeship system to accurately forecast commencements. A macro-economic–forecasting model, such as the Murphy-model, which is capable of encapsulating production, employment and trade into forecasts, is an ideal tool for forecasting contract of trainee commencements.

The VET system is adapting to the change in occupational structure in the workforce by providing contracts of training in a wider range of occupations. However, traditional trade training remains an important component of the national employment-based training efforts.

Forecasts presented in the preceding sections indicate that in 2000–01 between 139 500 and 145 300 people will commence a contract of training. Table 9.1 contains the forecasts of total numbers of commencements of contracts of training in 2000–01 by ASCO classification.

Table 9.1: Contract of training commencement total forecasts, 2000-01

ASCO CODE LEVEL	SCENARIO 1	SCENARIO 2	SCENARIO 3	*Variation*
MAJOR	138 797	208 042	145 341	*69 245*
SUB-MAJOR	138 086	207 744	144 880	*69 658*
MINOR	139 448	162 644	139 560	*23 196*
Variation	*1 362*	*45 398*	*5 781*	

Source: National apprentice and trainee statistics, ABS unpublished data based on 1996 Census benchmarks.

The data in table 9.1 show that the lowest amount of variation occurs at the minor group occupational level. Minor group occupational forecasts of contract of training commencements vary by one third the amount that sub-major groups do. Scenario 3, which uses the macro-economic forecast of rate of change, is in all occupational codes forecast to be the mid-value. While scenario 3 is favoured to be the most probable and accurate scenario of the three presented, it should only be taken as a mid-point or guide of the commencement numbers of apprentices and trainees. Scenarios 1 and 2 provide a guide of the potential variation that may be experienced by one, some, or all of the commencements by occupation.

Data presented in Table 9.1 suggest that the most probable forecasts are derived with the highest level occupational data. For resource allocation, policy planning and general decision-making, data derived in the same manner as that contained in appendix D should be used. While the other forecasting methods are not recommended, they should not be discounted as they provide a potential modeling option where high-level disaggregated data are not available.

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The forecasts presented show that a moderating of the growth in commencements can be expected in 2000–01. The stresses placed on the training system by the expansion of apprentices and trainees in 1997–1999 are likely to remain. However, the forecasts do not indicate that systems will be required to expand in order to cope with a continual influx of employment-based students.

References

ABS (Australian Bureau of Statistics) 1996, *Census of population and housing: CDATA96*, Australia.

—— 1997, *Employer training expenditure*, Cat no. 6353.0, AGPS, Canberra.

—— 1998, *Labour force, Australia*, Cat no. 6203.0, May, AGPS, Canberra.

—— various years, *Australian demographic statistics*, Cat no.3101.0, AGPS, Canberra.

ANTA (Australian National Training Authority) 1999, *Annual report 1998-1999*, ANTA, Brisbane

Burns, M & Shanahan, M 1999, *Labour market models and their use in projecting vocational education and training requirements*, CDR Consulting Pty. Ltd.

Dandie, S 1996, *Economic analysis of employment based entry level training: An analysis of trends in apprenticeship training*, CLMR, Curtin University of Technology, Perth.

DEET (Department of Employment, Education and Training) 1995, *Australia's workforce 2005: Jobs in the future*, Economic Policy and Analysis Division, AGPS, Canberra.

Department of Industry, Science and Tourism 1997, *Industry brief*, August 1997, DIST, AGPS, Canberra.

Econtech 1999, *Australian economic outlook*, 9 June 1999, Econtech, Kingston.

Fitzgerald, V 1998, 'Market frameworks in VET', in *The market for vocational education and training*, eds C Robinson & R Kenyon, NCVER, Adelaide.

Gospel, H 1995, 'The decline of apprenticeship training in Britain', *Journal of Industrial Relations*, 13(1), pp.22–44.

Hall, P 1995, 'Cities in the informational economy', in *Urban Futures*, Special issue no.5, Feb.

Kirby, P (chair) 1985, *Report of the Committee of Inquiry into Labour Market Programs*, Committee of Inquiry into Labour Market Programs, AGPS, Canberra.

Kearns, P 1997, *Flexible delivery of training*, Review of research, NCVER, Adelaide.

Mayer Committee 1992, *Employment-related key competencies for post compulsory education and training: A discussion paper*, Ministry of Education and Training, Melbourne.

Murphy, C & Douglas, J 1998, *The outlook for jobs*, NCVER, Adelaide.

NCVER (National Centre for Vocational Education Research) 1999a, *Apprentices and trainees 1997: Apprentices and trainees at TAFE*, An overview, NCVER, Adelaide.

—— 1999b, *Australian apprentice and trainee statistics: Apprentices and trainees in Australia 1985 to 1997*, NCVER, Adelaide.

OECD (Organisation for Economic Co-operation and Development) 1994, *Economic outlook*, June, no.55, OECD publications, Paris.

Smith, A 1998, *Training and development in Australia*, Second Edition, Butterworths, Sydney.

Stromback, T 1996, *The modern Australian apprenticeship and traineeship system (MAATS): A critical review and implications for stakeholders*, CLMR, Curtin University Perth.

Waterhouse, P, Wilson, B & Ewer, P 1999, *The changing nature and patterns of work and implications for VET*, Review of Research, NCVER, Adelaide.

VandenHeuvel, A & Wooden, M 1999, *Casualisation and outsourcing: Trends and implications for work related training*, NCVER, Adelaide

Appendix A

This appendix contains the total data for the apprentice and trainee numbers between 1994–95 and 1998–99.

		Commenced	Recommenced	Cancelled	Withdrawn	Completed	In-training
1998–99	*Male*	*108 119*	*5 859*	*22 710*	*8 678*	*36 410*	*160 731*
	Female	*81 498*	*2 642*	*14 342*	*6 053*	*21 313*	*73 488*
	Total	**189 617**	**8 501**	**37 052**	**14 731**	**57 723**	**234 219**
1997–98	*Male*	*72 965*	*5 598*	*19 739*	*5 785*	*34 178*	*144 881*
	Female	*46 842*	*2 177*	*10 242*	*4 254*	*15 807*	*50 592*
	Total	**119 807**	**7 775**	**29 981**	**10 039**	**49 985**	**195 473**
1996–97	*Male*	*59 192*	*6 907*	*15 887*	*5 890*	*29 790*	*137 588*
	Female	*31 826*	*2 497*	*7 737*	*3 273*	*12 214*	*37 766*
	Total	**91 018**	**9 404**	**23 624**	**9 163**	**42 004**	**175 354**
1995–96	*Male*	*49 443*	*6 518*	*12 640*	*5 266*	*22 118*	*128 324*
	Female	*21 486*	*2 444*	*5 106*	*2 497*	*7 989*	*29 724*
	Total	**70 929**	**8 962**	**17 746**	**7 763**	**30 107**	**153 048**
1994–95	*Male*	*41 611*	*5 996*	*10 750*	*4 792*	*23 055*	*113 387*
	Female	*13 837*	*2 130*	*4 792*	*2 091*	*8 788*	*22 395*
	Total	**55 448**	**8 126**	**15 542**	**6 883**	**31 843**	**135 782**

Source: NCVER, National apprentice and traineeship collection statistics.

Appendix B

ASCO unit group – Codes & Labels	Derived Average 1995–96	Average 1996–1997	% total 96–97	Average 1997–1998	% total 97–98	change	calculated share 95–96
1111 Legislators and Government Appointed Officials	**2135**	**2503**	**0.00030**	**2889**	**0.000341**	**0.00004**	**0.00026**
1112 General Managers	49686	43621	0.00522	37622	0.004446	-0.00077	0.00600
1191 Building and Construction Managers	**36435**	**37130**	**0.00444**	**38006**	**0.004492**	**0.00005**	**0.00440**
1192 Importers, Exporters and Wholesalers	14280	14479	0.00173	14748	0.001743	0.00001	0.00172
1193 Manufacturers	**28244**	**24073**	**0.00288**	**21964**	**0.002596**	**-0.00029**	**0.00317**
1211 Finance Managers	35320	35329	0.00423	35496	0.004195	-0.00003	0.00426
1212 Company Secretaries	**3718**	**2969**	**0.00036**	**2217**	**0.000262**	**-0.00009**	**0.00045**
1213 Human Resource Managers	19905	19379	0.00232	18928	0.002237	0.00008	0.00240
1221 Engineering Managers	**5174**	**5984**	**0.00072**	**6837**	**0.000808**	**0.00009**	**0.00062**
1222 Production Managers	44150	40965	0.00490	37895	0.004479	-0.00042	0.00533
1223 Supply and Distribution Managers	**10400**	**11467**	**0.00137**	**12607**	**0.001490**	**0.00012**	**0.00126**
1224 Information Technology Managers	13115	14262	0.00171	15497	0.001831	0.00012	0.00158
1231 Sales and Marketing Managers	**60106**	**66086**	**0.00791**	**72488**	**0.008567**	**0.00066**	**0.00725**
1291 Policy and Planning Managers	15876	14591	0.00175	13344	0.001577	-0.00017	0.00192
1292 Health Services Managers	**1415**	**3110**	**0.00037**	**4854**	**0.000574**	**0.00020**	**0.00017**
1293 Education Managers	13964	14163	0.00181	14455	0.001945	0.00013	0.00169
1294 Commissioned Officers (Management)	**1505**	**1548**	**0.00019**	**1598**	**0.000189**	**0.00000**	**0.00018**
1295 Child Care Coordinators	5577	5579	0.00067	5607	0.000663	-0.00001	0.00067
1296 Media Producers and Artistic Directors	**6449**	**5173**	**0.00062**	**3893**	**0.000460**	**-0.00016**	**0.00078**
1299 Other Specialist Managers	18975	18663	0.00223	20469	0.002419	0.00019	0.00205
1311 Mixed Crop and Livestock Farmers	**105639**	**105358**	**0.01261**	**105541**	**0.012473**	**-0.00014**	**0.01275**
1312 Livestock Farmers	92504	86645	0.01037	81049	0.009579	-0.00079	0.01116
1313 Crop Farmers	**42025**	**52445**	**0.00628**	**63318**	**0.007483**	**0.00121**	**0.00507**
1314 Aquaculture Farmers	1065	1095	0.00013	1141	0.000135	0.00000	0.00013
2111 Chemists	**7826**	**6801**	**0.00081**	**5785**	**0.000684**	**-0.00013**	**0.00094**
2112 Geologists and Geophysicists	4138	5445	0.00065	6803	0.000804	0.00015	0.00050
2113 Life Scientists	**8408**	**6900**	**0.00083**	**5391**	**0.000637**	**-0.00019**	**0.00101**
2114 Environmental and Agricultural Science Professionals	8993	13331	0.00160	17819	0.002106	0.00051	0.00109
2115 Medical Scientists	**12587**	**13403**	**0.00160**	**14295**	**0.001689**	**0.00009**	**0.00152**
2119 Other Natural and Physical Science Professionals	4372	4843	0.00058	5345	0.000632	0.00005	0.00053
2121 Architects and Landscape Architects	**14669**	**14945**	**0.00179**	**15293**	**0.001807**	**0.00002**	**0.00177**
2122 Quantity Surveyors	2099	1990	0.00024	1889	0.000223	-0.00002	0.00025
2123 Cartographers and Surveyors	**4009**	**5666**	**0.00080**	**9409**	**0.001112**	**0.00031**	**0.00048**
2124 Civil Engineers	20130	24194	0.00290	28451	0.003362	0.00047	0.00243
2125 Electrical and Electronics Engineers	**19825**	**23329**	**0.00279**	**26908**	**0.003180**	**0.00039**	**0.00240**
2126 Mechanical, Production and Plant Engineers	24165	23128	0.00277	22173	0.002620	-0.00015	0.00292
2127 Mining and Materials Engineers	**3677**	**4635**	**0.00055**	**5634**	**0.000666**	**0.00011**	**0.00044**
2128 Engineering Technologists	407	403	0.00005	402	0.000047	0.00000	0.00005
2129 Other Building and Engineering Professionals	**7786**	**9339**	**0.00112**	**10985**	**0.001298**	**0.00018**	**0.00094**
2211 Accountants	103644	101018	0.01209	98787	0.011675	-0.00042	0.01251
2212 Auditors	**2984**	**4013**	**0.00048**	**5082**	**0.000601**	**0.00012**	**0.00036**
2213 Corporate Treasurers	1882	1344	0.00016	801	0.000095	-0.00007	0.00023
2221 Marketing and Advertising Professionals	**26779**	**30450**	**0.00364**	**34335**	**0.004058**	**0.00041**	**0.00323**
2222 Technical Sales Representatives	20059	23992	0.00287	28115	0.003323	0.00045	0.00242
2231 Computing Professionals	**91417**	**104606**	**0.01252**	**118540**	**0.014009**	**0.00149**	**0.01103**
2291 Human Resource Professionals	36096	41654	0.00499	47514	0.005616	0.00063	0.00436
2292 Librarians	**15000**	**13023**	**0.00156**	**11083**	**0.001307**	**-0.00025**	**0.00181**
2293 Mathematicians, Statisticians and Actuaries	6343	4072	0.00049	2792	0.000330	-0.00016	0.00064
2294 Business and Organisation Analysts	**21143**	**26643**	**0.00319**	**32379**	**0.003827**	**0.00064**	**0.00255**
2295 Property Professionals	1948	3741	0.00045	5487	0.000660	0.00021	0.00024
2299 Other Business and Information Professionals	**11213**	**11516**	**0.00138**	**11876**	**0.001404**	**0.00003**	**0.00135**
2311 Generalist Medical Practitioners	35815	35176	0.00421	34680	0.004099	-0.00011	0.00432
2312 Specialist Medical Practitioners	**20216**	**16499**	**0.00197**	**12777**	**0.001510**	**-0.00046**	**0.00244**
2321 Nurse Managers	3069	2437	0.00035	2508	0.000296	-0.00005	0.00041
2322 Nurse Educators and Researchers	**2670**	**2764**	**0.00033**	**2872**	**0.000339**	**0.00001**	**0.00032**
2323 Registered Nurses	143050	145250	0.01739	148145	0.017508	0.00012	0.01726
2324 Registered Midwives	**6530**	**7302**	**0.00087**	**8122**	**0.000960**	**0.00009**	**0.00079**
2325 Registered Mental Health Nurses	6662	6290	0.00063	4944	0.000584	-0.00005	0.00068
2326 Registered Developmental Disability Nurses	**1340**	**754**	**0.00009**	**159**	**0.000019**	**-0.00007**	**0.00016**
2381 Dental Practitioners	6555	7658	0.00092	8818	0.001042	0.00013	0.00079
2382 Pharmacists	**10490**	**13021**	**0.00156**	**15663**	**0.001851**	**0.00029**	**0.00127**
2383 Occupational Therapists	4105	4418	0.00053	4757	0.000562	0.00003	0.00050
2384 Optometrists	**3059**	**2423**	**0.00029**	**1785**	**0.000211**	**-0.00008**	**0.00037**
2385 Physiotherapists	8492	9661	0.00116	10897	0.001288	0.00013	0.00102
2386 Speech Pathologists	**1753**	**1861**	**0.00022**	**1980**	**0.000234**	**0.00001**	**0.00021**
2387 Chiropractors and Osteopaths	4860	3145	0.00038	1418	0.000168	0.00021	0.00059
2388 Podiatrists	**874**	**894**	**0.00011**	**918**	**0.000108**	**0.00000**	**0.00011**
2391 Medical Imaging Professionals	8614	7441	0.00089	6276	0.000742	-0.00015	0.00104
2392 Veterinarians	**6041**	**4774**	**0.00057**	**3502**	**0.000414**	**-0.00016**	**0.00073**
2393 Dietitians	1725	1940	0.00023	2169	0.000256	0.00002	0.00021
2394 Natural Therapy Professionals	**2152**	**2876**	**0.00034**	**3629**	**0.000429**	**0.00008**	**0.00026**
2399 Other Health Professionals	4573	4764	0.00057	3959	0.000468	-0.00010	0.00067
2411 Pre-Primary School Teachers	**14180**	**13065**	**0.00156**	**11986**	**0.001416**	**-0.00015**	**0.00171**
2412 Primary School Teachers	114152	117182	0.01403	120798	0.014276	0.00025	0.01378
2413 Secondary School Teachers	**105770**	**110815**	**0.01326**	**115460**	**0.013764**	**0.00050**	**0.01276**
2414 Special Education Teachers	11057	13013	0.00156	15068	0.001781	0.00022	0.00133
2421 University Lecturers and Tutors	**41413**	**36733**	**0.00440**	**32118**	**0.003796**	**-0.00060**	**0.00500**
2422 Vocational Education Teachers	31228	32012	0.00383	32966	0.003895	0.00006	0.00377
2491 ExtraSystemic Teachers	**30609**	**30941**	**0.00370**	**31418**	**0.003713**	**0.00001**	**0.00369**
2492 English as a Second Language Teachers	1127	1190	0.00014	1260	0.000149	0.00001	0.00014
2493 Education Officers	**9622**	**8744**	**0.00105**	**7887**	**0.000932**	**-0.00011**	**0.00116**
2511 Social Workers	10076	10428	0.00125	10833	0.001280	0.00003	0.00122
2512 Welfare and Community Workers	**14999**	**17109**	**0.00205**	**19339**	**0.002286**	**0.00024**	**0.00181**
2513 Counsellors	11798	10863	0.00130	9957	0.001177	0.00012	0.00142
2514 Psychologists	**3607**	**6906**	**0.00083**	**10305**	**0.001218**	**0.00039**	**0.00044**
2515 Ministers of Religion	14023	14900	0.00178	15861	0.001874	0.00009	0.00169

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ASCO unit group – Codes & Labels	Derived Average 1995–96	Average 1996–1997	% total 96–97	Average 1997–1998	% total 97–98	change	calculated share 95–96
2521 Legal Professionals	34355	39398	0.00472	44723	0.005286	0.00057	0.00415
2522 Economists	2927	3330	0.00035	3945	0.000348	0.00000	0.00035
2523 Urban and Regional Planners	3765	4663	0.00056	5600	0.000662	0.00010	0.00045
2529 Other Social Professionals	6008	6870	0.00079	7172	0.000848	0.00006	0.00073
2531 Visual Arts and Crafts Professionals	11568	13612	0.00163	15760	0.001863	0.00023	0.00140
2532 Photographers	6810	7301	0.00087	7834	0.000926	0.00005	0.00082
2533 Designers and Illustrators	32612	33266	0.00398	34082	0.004028	0.00005	0.00394
2534 Journalists and Related Professionals	21727	20219	0.00242	18770	0.002218	-0.00020	0.00262
2535 Authors and Related Professionals	3702	3562	0.00043	3435	0.000406	-0.00002	0.00045
2536 Film, Television, Radio and Stage Directors	3708	4773	0.00057	5881	0.000695	0.00012	0.00045
2537 Musicians and Related Professionals	6477	7493	0.00090	8563	0.001012	0.00012	0.00078
2538 Actors, Dancers and Related Professionals	5774	5252	0.00063	4743	0.000561	-0.00007	0.00070
2539 Media Presenters	2333	2427	0.00029	2534	0.000300	0.00001	0.00028
2541 Air Transport Professionals	8776	9647	0.00115	10580	0.001250	0.00010	0.00106
2542 Sea Transport Professionals	9737	9252	0.00111	8798	0.001040	-0.00007	0.00118
2543 Occupational and Environmental Health Professionals	6847	7260	0.00085	7309	0.000864	0.00002	0.00083
2549 Other Professionals	9331	8503	0.00102	7695	0.000909	-0.00011	0.00113
3111 Medical Technical Officers	8533	9717	0.00116	10970	0.001296	0.00013	0.00103
3112 Science Technical Officers	36233	30213	0.00362	24202	0.002860	-0.00076	0.00437
3121 Building, Architectural and Surveying Associate Professionals	38394	39104	0.00468	40004	0.004728	0.00005	0.00463
3122 Civil Engineering Associate Professionals	7176	8255	0.00099	9391	0.001110	0.00012	0.00087
3123 Electrical Engineering Associate Professionals	9629	9627	0.00103	9642	0.000903	-0.00013	0.00116
3124 Electronic Engineering Associate Professionals	20235	20464	0.00245	20788	0.002457	0.00001	0.00244
3125 Mechanical Engineering Associate Professionals	9782	9220	0.00110	8687	0.001027	-0.00008	0.00118
3129 Other Building and Engineering Associate Professionals	5484	5763	0.00069	6073	0.000718	0.00003	0.00066
3211 Branch Accountants and Managers, Financial Institutions	29656	26981	0.00323	24370	0.002880	-0.00035	0.00358
3212 Financial Dealers and Brokers	24966	23914	0.00286	22917	0.002708	-0.00015	0.00302
3213 Financial Investment Advisers	11831	14832	0.00178	17563	0.002123	0.00035	0.00143
3291 Office Managers	65876	66425	0.00795	67179	0.007939	-0.00001	0.00796
3292 Project and Program Administrators	30634	33207	0.00397	35982	0.004252	0.00028	0.00370
3293 Real Estate Associate Professionals	54066	53493	0.00640	53146	0.008281	-0.00012	0.00652
3294 Computing Support Technicians	19124	24619	0.00295	20128	0.002379	-0.00057	0.00351
3311 Ship Managers	215292	198503	0.02376	182245	0.021538	-0.00222	0.02598
3321 Restaurant and Catering Managers	31910	32435	0.00388	33117	0.003914	0.00003	0.00385
3322 Chefs	20744	30141	0.00361	39871	0.004712	0.00110	0.00250
3323 Hotel and Motel Managers	26184	24515	0.00293	22920	0.002709	-0.00023	0.00316
3324 Club Managers (Licensed Premises)	5744	5502	0.00066	5280	0.000624	-0.00003	0.00069
3325 Caravan Park and Camping Ground Managers	5317	4847	0.00058	4388	0.000519	-0.00006	0.00064
3329 Other Hospitality and Accommodation Managers	6260	5548	0.00066	4816	0.000569	-0.00009	0.00076
3391 Sport and Recreation Managers	7279	6555	0.00078	5845	0.000691	-0.00009	0.00088
3392 Customer Service Managers	11000	10766	0.00129	10575	0.001250	-0.00004	0.00133
3393 Transport Company Managers	7999	6872	0.00082	5752	0.000680	-0.00014	0.00097
3399 Other Managing Supervisors (Sales and Service)	43577	48689	0.00583	54126	0.006397	0.00057	0.00526
3411 Enrolled Nurses	26202	29186	0.00349	32263	0.003825	0.00033	0.00316
3421 Welfare Associate Professionals	11937	10914	0.00131	9918	0.001172	-0.00013	0.00144
3491 Ambulance Officers and Paramedics	5371	6737	0.00081	8162	0.000965	0.00016	0.00065
3492 Dental Associate Professionals	3143	4531	0.00054	5968	0.000705	0.00016	0.00038
3493 Aboriginal and Torres Strait Islander Health Workers	1296	1264	0.00015	1236	0.000146	-0.00001	0.00016
3494 Massage Therapists	3507	2968	0.00036	2432	0.000287	-0.00007	0.00042
3911 Police Officers	47712	44218	0.00529	40849	0.004828	-0.00046	0.00576
3991 Primary Products Inspectors	1946	3192	0.00038	4477	0.000529	0.00015	0.00023
3992 Safety Inspectors	6687	5988	0.00072	5301	0.000627	-0.00009	0.00081
3993 Sportspersons, Coaches and Related Support Workers	16744	17298	0.00207	17941	0.002120	0.00005	0.00202
3995 Senior Fire Fighters	19	232	0.00003	450	0.000053	0.00003	0.00000
3996 Retail Buyers	1375	3499	0.00042	5683	0.000672	0.00025	0.00017
3997 Library Technicians	3287	4323	0.00052	5400	0.000638	0.00012	0.00040
3999 Other Miscellaneous Associate Professionals	5304	5020	0.00060	4752	0.000562	-0.00004	0.00064
4111 General Mechanical Engineering Tradespersons	1670	1260	0.00013	421	0.000050	-0.00008	0.00022
4112 Metal Fitters and Machinists	100215	99204	0.01187	98615	0.011655	-0.00022	0.01209
4113 Toolmakers	12014	10792	0.00129	9593	0.001134	-0.00016	0.00145
4114 Aircraft Maintenance Engineers	13348	12019	0.00144	10715	0.001266	-0.00017	0.00161
4115 Precision Metal Tradespersons	7094	7394	0.00096	7649	0.001058	0.00010	0.00086
4121 General Fabrication Engineering Tradespersons	1202	648	0.00008	85	0.000010	-0.00007	0.00015
4122 Structural Steel and Welding Tradespersons	59952	60461	0.00724	61051	0.007239	0.00000	0.00723
4123 Forging Tradespersons	100	1233	*	2780	0.000328	*	*see footnotes
4124 Sheetmetal Tradespersons	8991	9784	0.00117	10636	0.001257	0.00009	0.00109
4125 Metal Casting Tradespersons	100	781	*	1728	0.000204	*	* see footnotes
4126 Metal Finishing Tradespersons	1819	1982	0.00023	154	0.000231	0.00001	0.00022
4211 Motor Mechanics	97406	97394	0.01166	97816	0.011560	-0.00010	0.01175
4212 Automotive Electricians	7750	7243	0.00087	6758	0.000799	-0.00007	0.00094
4213 Panel Beaters	19985	19071	0.00228	18222	0.002154	-0.00013	0.00241
4214 Vehicle Painters	9799	9879	0.00118	9926	0.001303	0.00012	0.00106
4215 Vehicle Body Makers	1415	2056	0.00025	2720	0.000321	0.00006	0.00017
4216 Vehicle Trimmers	1875	2462	0.00029	3072	0.000363	0.00007	0.00023
4311 Electricians	100694	95061	0.01138	89734	0.010605	-0.00077	0.01215
4312 Refrigeration and Airconditioning Mechanics	15844	16201	0.00182	16612	0.001727	-0.00009	0.00191
4313 Electrical Distribution Tradespersons	8282	9009	0.00096	9755	0.000918	-0.00004	0.00100
4314 Electronic Instrument Tradespersons	1738	1104	0.00013	432	0.000055	-0.00008	0.00021
4315 Electronic and Office Equipment Tradespersons	24266	30263	0.00362	36520	0.004318	0.00069	0.00293
4316 Communications Tradespersons	32950	31312	0.00375	29778	0.003519	-0.00023	0.00398
4411 Carpentry and Joinery Tradespersons	88900	93001	0.01113	97643	0.011540	0.00041	0.01073
4412 Fibrous Plasterers	17928	17856	0.00211	17457	0.002063	-0.00005	0.00216
4413 Roof Slaters and Tilers	9238	8177	0.00098	7129	0.000843	-0.00014	0.00111
4414 Bricklayers	22160	22215	0.00266	22370	0.002644	-0.00002	0.00267
4415 Solid Plasterers	2381	2336	0.00028	2300	0.000272	-0.00001	0.00029
4416 Wall and Floor Tilers and Stonemasons	15214	14161	0.00170	13160	0.001554	-0.00014	0.00184
4421 Painters and Decorators	39295	37149	0.00445	35124	0.004151	-0.00030	0.00474
4422 Signwriters	4066	4144	0.00050	4220	0.000499	0.00000	0.00049
4423 Floor Finishers	7191	7668	0.00092	8185	0.000967	0.00005	0.00087
4431 Plumbers	55771	52517	0.00629	49428	0.005842	-0.00044	0.00673
4511 Meat Tradespersons	25643	25787	0.00309	25950	0.003079	-0.00001	0.00309

ASCO unit group – Codes & Labels	Derived Average 1995–96	Average 1996–1997	% total 96–97	Average 1997–1998	% total 97–98	change	calculated share 95–96
4512 Bakers and Pastrycooks	27046	24610	0.00295	22292	0.002627	-0.00032	0.00326
4513 Cooks	**37254**	**36317**	**0.00435**	**35522**	**0.004198**	**-0.00015**	**0.00450**
4519 Other Food Tradespersons	2885	2207	0.00026	1525	0.000180	-0.00008	0.00035
4811 Farm Overseers	**1499**	**1199**	**0.00014**	**898**	**0.000106**	**-0.00004**	**0.00018**
4812 Shearers	7914	7664	0.00091	7240	0.000856	-0.00005	0.00095
4813 Wool, Hide and Skin Classers	**2337**	**2074**	**0.00025**	**1815**	**0.000214**	**-0.00003**	**0.00028**
4814 Animal Trainers	4330	5281	0.00040	2427	0.000287	-0.00012	0.00052
4621 Nurserypersons	**5768**	**5979**	**0.00072**	**6220**	**0.000735**	**0.00002**	**0.00070**
4622 Greenkeepers	12149	12638	0.00151	13194	0.001559	0.00005	0.00147
4623 Gardeners	**33574**	**36243**	**0.00434**	**39130**	**0.004625**	**0.00029**	**0.00405**
4911 Graphic PrePress Tradespersons	6729	6572	0.00079	6441	0.000761	-0.00003	0.00081
4912 Printing Machinists and Small Offset Printers	**25797**	**23942**	**0.00287**	**22155**	**0.002618**	**-0.00025**	**0.00311**
4913 Binders and Finishers	1015	2683	0.00032	4357	0.000515	0.00020	0.00012
4914 Screen Printers	**7625**	**5779**	**0.00069**	**3919**	**0.000463**	**-0.00023**	**0.00092**
4921 Wood Machinists and Turners	5762	4964	0.00059	3150	0.000372	-0.00022	0.00082
4922 Cabinetmakers	**22149**	**25989**	**0.00311**	**30026**	**0.003549**	**0.00044**	**0.00267**
4929 Other Wood Tradespersons	8132	6672	0.00080	5211	0.000616	-0.00018	0.00098
4931 Hairdressers	**38907**	**40548**	**0.00485**	**42406**	**0.005012**	**0.00016**	**0.00470**
4941 Clothing Tradespersons	16166	12239	0.00146	9304	0.001100	-0.00037	0.00183
4942 Upholsterers and Bedding Tradespersons	**5527**	**5620**	**0.00067**	**5739**	**0.000678**	**0.00001**	**0.00067**
4943 Footwear Tradespersons	5148	4040	0.00048	2927	0.000346	-0.00014	0.00062
4944 Leather Goods, Canvas Goods and Sail Makers	**3426**	**3280**	**0.00039**	**3147**	**0.000372**	**-0.00002**	**0.00041**
4981 Marine Construction Tradespersons	2629	3473	0.00042	4351	0.000514	0.00010	0.00032
4982 Glass Tradespersons	**5555**	**6520**	**0.00078**	**7534**	**0.000890**	**0.00011**	**0.00067**
4983 Jewellers and Related Tradespersons	4326	4936	0.00059	5581	0.000660	0.00007	0.00052
4984 Florists	**4683**	**5873**	**0.00070**	**7115**	**0.000841**	**0.00014**	**0.00057**
4985 Fire Fighters	9759	9768	0.00117	9820	0.001161	-0.00001	0.00118
4986 Drillers	**4449**	**4465**	**0.00053**	**4502**	**0.000532**	**0.00000**	**0.00054**
4987 Chemical, Petroleum and Gas Plant Operators	7374	6536	0.00078	5710	0.000675	-0.00011	0.00089
4988 Power Generation Plant Operators	**2424**	**2769**	**0.00033**	**3134**	**0.000370**	**0.00004**	**0.00029**
4992 Performing Arts Support Workers	8043	9734	0.00117	11505	0.001360	0.00019	0.00097
4999 Other Miscellaneous Tradespersons and Related Workers	**5629**	**6356**	**0.00076**	**7126**	**0.000842**	**0.00008**	**0.00068**
5111 Secretaries and Personal Assistants	245700	230738	0.02762	216490	0.025586	-0.00203	0.02965
5911 Bookkeepers	**91244**	**94250**	**0.01128**	**97739**	**0.011551**	**0.00027**	**0.01101**
5912 Credit and Loans Officers	11701	14773	0.00177	17975	0.002124	0.00036	0.00141
5991 Advanced Legal and Related Clerks	**11872**	**13548**	**0.00162**	**15320**	**0.001811**	**0.00019**	**0.00143**
5992 Court and Hansard Reporters	1278	1250	0.00015	1226	0.000145	0.00000	0.00015
5993 Insurance Agents	**11527**	**10956**	**0.00131**	**10422**	**0.001232**	**-0.00008**	**0.00139**
5994 Insurance Risk Surveyors, Investigators and Loss Adjusters	2907	4708	0.00056	6568	0.000776	0.00021	0.00035
5995 Desktop Publishing Operators	**4678**	**4031**	**0.00048**	**3389**	**0.000400**	**-0.00008**	**0.00056**
5996 Travel Attendants	6775	8239	0.00099	9770	0.001155	0.00017	0.00082
5999 Other Miscellaneous Advanced Clerical and Service Workers	**4837**	**8405**	**0.00101**	**12085**	**0.001428**	**0.00042**	**0.00058**
6111 General Clerks	65053	69394	0.00831	74137	0.008762	0.00046	0.00785
6121 Keyboard Operators	**108819**	**112854**	**0.01351**	**117477**	**0.013884**	**0.00036**	**0.01313**
6131 Receptionists	130257	129796	0.01554	129903	0.015352	-0.00018	0.01572
6141 Accounting Clerks	**164560**	**167545**	**0.02005**	**171341**	**0.020250**	**0.00020**	**0.01996**
6142 Payroll Clerks	27767	25230	0.00302	22752	0.002689	-0.00033	0.00335
6143 Bank Workers	**94616**	**90417**	**0.01082**	**86533**	**0.010227**	**-0.00060**	**0.01142**
6144 Insurance Clerks	21199	20086	0.00240	19039	0.002250	-0.00015	0.00256
6145 Money Market and Statistical Clerks	**1970**	**2636**	**0.00032**	**3326**	**0.000393**	**0.00008**	**0.00024**
6151 Production Recording Clerks	7832	6382	0.00076	4931	0.000583	-0.00018	0.00095
6152 Transport and Despatching Clerks	**26127**	**25920**	**0.00310**	**25825**	**0.003052**	**-0.00005**	**0.00315**
6153 Stock and Purchasing Clerks	58158	61196	0.00732	64571	0.007631	0.00031	0.00702
6191 Inquiry and Admissions Clerks	**48551**	**56653**	**0.00678**	**65178**	**0.007703**	**0.00092**	**0.00586**
6192 Library Assistants	9498	10175	0.00122	10913	0.001290	0.00007	0.00115
6193 Personnel Clerks	**11626**	**13681**	**0.00164**	**15840**	**0.001872**	**0.00023**	**0.00140**
6194 Intermediate Inspectors and Examiners	15504	16070	0.00192	16719	0.001976	0.00005	0.00187
6199 Other Intermediate Clerical Workers	**15506**	**16880**	**0.00202**	**18359**	**0.002170**	**0.00015**	**0.00187**
6211 Sales Representatives	68034	93517	0.01119	89323	0.010557	-0.00064	0.01183
6212 Motor Vehicle and Related Products Salespersons	**21499**	**19617**	**0.00235**	**17782**	**0.002101**	**-0.00025**	**0.00259**
6213 Retail and Checkout Supervisors	12184	14941	0.00179	17823	0.002106	0.00032	0.00147
6311 Education Aides	**32303**	**34708**	**0.00415**	**37319**	**0.004410**	**0.00026**	**0.00390**
6312 Children's Care Workers	63991	66059	0.00791	68464	0.008091	0.00018	0.00772
6313 Special Care Workers	**54811**	**56825**	**0.00680**	**59136**	**0.006989**	**0.00019**	**0.00661**
6314 Personal Care and Nursing Assistants	52126	48710	0.00583	45439	0.005370	-0.00046	0.00629
6321 Hotel Service Supervisors	**8712**	**6861**	**0.00082**	**5002**	**0.000591**	**-0.00023**	**0.00105**
6322 Bar Attendants	48968	53231	0.00637	57821	0.006834	0.00046	0.00591
6323 Waiters	**83726**	**85160**	**0.01019**	**87004**	**0.010282**	**0.00009**	**0.01010**
6324 Hospitality Trainees	356	340	0.00004	324	0.000038	0.00000	0.00004
6391 Dental Assistants	**12829**	**13379**	**0.00160**	**14000**	**0.001655**	**0.00005**	**0.00155**
6392 Veterinary Nurses	7220	6303	0.00063	3370	0.000398	-0.00024	0.00087
6393 Prison Officers	**6153**	**7124**	**0.00085**	**8146**	**0.000963**	**0.00011**	**0.00074**
6394 Gaming Workers	4680	6077	0.00073	7530	0.000890	0.00016	0.00056
6395 Personal Care Consultants	**11939**	**14151**	**0.00169**	**16473**	**0.001947**	**0.00025**	**0.00144**
6396 Fitness Instructors and Related Workers	9496	9716	0.00116	9985	0.001180	0.00002	0.00115
6397 Travel and Tourism Agents	**21689**	**22247**	**0.00266**	**22917**	**0.002708**	**0.00005**	**0.00262**
6399 Other Intermediate Service Workers	11252	13838	0.00166	16539	0.001955	0.00030	0.00136
7111 Mobile Construction Plant Operators	**46628**	**44467**	**0.00532**	**42458**	**0.005018**	**-0.00030**	**0.00563**
7112 Forklift Drivers	44258	40634	0.00486	37114	0.004386	-0.00048	0.00534
7119 Other Mobile Plant Operators	**12539**	**12883**	**0.00154**	**13292**	**0.001571**	**0.00003**	**0.00151**
7121 Engine and Boiler Operators	3030	2575	0.00031	2122	0.000251	-0.00006	0.00037
7122 Crane, Hoist and Lift Operators	**8268**	**8499**	**0.00102**	**8773**	**0.001037**	**0.00002**	**0.00100**
7123 Engineering Production Systems Workers	62265	55796	0.00668	49439	0.005843	-0.00084	0.00751
7124 Pulp and Paper Mill Operators	**2950**	**2402**	**0.00029**	**1853**	**0.000219**	**-0.00007**	**0.00036**
7129 Other Intermediate Stationary Plant Operators	13936	14914	0.00179	12915	0.001526	-0.00026	0.00204
7211 Sewing Machinists	**35756**	**35389**	**0.00424**	**35171**	**0.004157**	**-0.00008**	**0.00431**
7212 Textile and Footwear Production Machine Operators	15736	14008	0.00168	12306	0.001454	-0.00022	0.00190
7291 Plastics Production Machine Operators	**15642**	**14917**	**0.00179**	**14244**	**0.001683**	**-0.00010**	**0.00189**
7292 Rubber Production Machine Operators	6759	4647	0.00058	2916	0.000345	-0.00024	0.00082
7293 Chemical Production Machine Operators	**1449**	**2281**	**0.00027**	**3141**	**0.000371**	**0.00010**	**0.00017**
7294 Wood Processing Machine Operators	7580	7103	0.00085	6647	0.000786	-0.00006	0.00091

ASCO unit group – Codes & Labels	Derived Average 1995–96	Average 1996–1997	% total 96–97	Average 1997–1998	% total 97–98	change	calculated share 95–96
7295 Paper Products Machine Operators	2569	3507	0.00042	4379	0.000517	0.00010	0.00032
7296 Glass Production Machine Operators	1991	2093	0.00025	2217	0.000261	0.00001	0.00024
7297 Clay, Stone and Concrete Processing Machine Operators	5514	4630	0.00055	3747	0.000443	-0.00011	0.00067
7298 Photographic Developers and Printers	6030	6792	0.00081	7600	0.000898	0.00009	0.00073
7299 Other Intermediate Machine Operators	12598	12290	0.00147	12030	0.001422	-0.00005	0.00152
7311 Truck Drivers	150328	146200	0.01750	142589	0.016852	-0.00065	0.01815
7312 Bus and Tram Drivers	25384	28141	0.00337	31080	0.003673	0.00030	0.00306
7313 Automotive Drivers	28154	30260	0.00360	32442	0.003798	0.00020	0.00340
7314 Delivery Drivers	52810	57807	0.00692	63167	0.007465	0.00055	0.00637
7315 Train Drivers and Assistants	8875	9503	0.00114	10187	0.001204	0.00007	0.00107
7911 Miners	16866	17472	0.00209	18169	0.002147	0.00006	0.00204
7912 Blasting Workers* see footnote	100	233	0.00004	467	0.000113	*see footnote	see footnote
7913 Structural Steel Construction Workers	9543	9622	0.00115	9746	0.001152	0.00000	0.00115
7914 Insulation and Home Improvements Installers	14510	12907	0.00154	11287	0.001339	-0.00021	0.00175
7991 Motor Vehicle Parts and Accessories Fitters	10257	10970	0.00131	11747	0.001388	0.00006	0.00124
7992 Product Quality Controllers	32249	25652	0.00307	19030	0.002249	-0.00082	0.00389
7993 Storepersons	136596	129002	0.01544	121823	0.014397	-0.00104	0.01648
7994 Seafarers and Fishing Hands	7580	7872	0.00094	8205	0.000970	0.00003	0.00091
7995 Forestry and Logging Workers	4276	5165	0.00062	6096	0.000720	0.00010	0.00052
7996 Printing Hands	4865	6837	0.00082	8880	0.001050	0.00023	0.00059
8111 Registry and Filing Clerks	26229	23950	0.00287	21730	0.002568	-0.00030	0.00317
8112 Mail Sorting Clerks	18176	18641	0.00223	19200	0.002269	0.00004	0.00219
8113 Switchboard Operators	16948	15204	0.00182	13491	0.001594	-0.00023	0.00205
8114 Messengers	14952	13286	0.00159	11645	0.001376	-0.00021	0.00180
8115 Betting Clerks	3193	5114	0.00061	7097	0.000839	0.00023	0.00039
8116 Office Trainees	108	143	0.00002	179	0.000021	0.00000	0.00001
8119 Other Elementary Clerks	16858	12642	0.00151	8394	0.000992	-0.00052	0.00203
8211 Sales Assistants	482647	498333	0.05965	514572	0.061050	0.00140	0.05824
8291 Checkout Operators and Cashiers	100603	100589	0.01204	101022	0.011939	-0.00010	0.01214
8292 Ticket Salespersons	12463	14358	0.00172	16357	0.001933	0.00021	0.00150
8293 Street Vendors and Related Workers	25416	25332	0.00303	25359	0.002997	-0.00004	0.00307
8294 Telemarketers	7916	10830	0.00130	13853	0.001637	0.00034	0.00096
8295 Sales Demonstrators and Models	6354	6156	0.00074	5981	0.000707	-0.00003	0.00077
8296 Service Station Attendants	12571	12132	0.00145	11728	0.001387	0.00006	0.00152
8297 Sales and Service Trainees	115	229	0.00003	346	0.000041	0.00001	0.00001
8299 Other Elementary Sales Workers	4027	4031	0.00048	4033	0.000479	0.00000	0.00049
8311 Guards and Security Officers	34225	33066	0.00396	32030	0.003785	-0.00017	0.00413
8312 Ushers, Porters and Related Workers	13681	11985	0.00143	10328	0.001218	-0.00022	0.00165
8313 Domestic Housekeepers	4331	2908	0.00035	1457	0.000173	-0.00017	0.00052
8314 Caretakers	7802	6528	0.00078	5287	0.000621	0.00016	0.00094
8315 Laundry Workers	18237	17510	0.00210	16888	0.002232	0.00014	0.00196
8319 Other Elementary Service Workers	34286	30162	0.00361	26085	0.003083	-0.00053	0.00414
9111 Cleaners	203357	206249	0.02469	210123	0.024833	0.00015	0.02454
9211 Engineering Production Process Workers	21000	24731	0.00296	29651	0.003386	0.00043	0.00253
9212 Product Assemblers	49485	47543	0.00569	45793	0.005412	-0.00028	0.00597
9213 Meat and Fish Process Workers	24419	23466	0.00281	22537	0.002671	-0.00014	0.00295
9214 Other Food Factory Hands	20595	23384	0.00280	26337	0.003113	0.00031	0.00249
9215 Wood Products Factory Hands	16316	14719	0.00176	13154	0.001555	-0.00021	0.00197
9219 Other Process Workers	28506	25130	0.00301	21795	0.002576	-0.00043	0.00344
9221 Hand Packers	50359	56368	0.00675	62754	0.007416	0.00067	0.00608
9222 Packagers and Container Fillers	11476	11438	0.00137	11451	0.001353	-0.00002	0.00138
9911 Mining Support Workers and Driller's Assistants	4085	3646	0.00044	3214	0.000380	-0.00006	0.00049
9912 Earthmoving Labourers	2933	2568	0.00031	2207	0.000261	-0.00005	0.00035
9913 Paving and Surfacing Labourers	13688	11535	0.00138	9388	0.001110	-0.00027	0.00165
9914 Survey Hands	2746	2300	0.00028	1854	0.000219	-0.00006	0.00033
9915 Railway Labourers	7966	6974	0.00083	5991	0.000708	-0.00013	0.00096
9916 Construction and Plumber's Assistants	28974	31688	0.00379	34601	0.004089	0.00030	0.00350
9917 Concreters	18004	20821	0.00249	23781	0.002812	0.00032	0.00217
9918 Electrical and Telecommunications Trades Assistants	3843	3386	0.00041	2934	0.000347	-0.00006	0.00046
9919 Other Mining, Construction and Related Labourers	4278	4765	0.00084	5251	0.000621	0.00032	0.00052
9921 Farm Hands	104801	99653	0.01193	94862	0.011211	-0.00072	0.01265
9922 Nursery and Garden Labourers	39232	37531	0.00449	35788	0.004974	0.00048	0.00401
9929 Other Agricultural and Horticultural Labourers	685	1662	0.00020	2966	0.000315	0.00012	0.00008
9931 Kitchenhands	99824	98401	0.01178	97287	0.011510	-0.00027	0.01205
9932 Fast Food Cooks	17109	16938	0.00203	16838	0.001990	-0.00004	0.00206
9933 Food Trades Assistants	5217	5650	0.00068	6118	0.000723	0.00005	0.00063
9991 Garbage Collectors	8934	5863	0.00070	2753	0.000325	-0.00038	0.00108
9992 Freight and Furniture Handlers	9922	10885	0.00130	11917	0.001408	0.00011	0.00120
9993 Handypersons	15636	19704	0.00236	23945	0.002830	0.00047	0.00189
9999 Other Miscellaneous Labourers and Related Workers	12434	14561	0.00234	16715	0.001975	-0.00037	0.00271
Total	**8287827**	**8354705**		**8461409**			

Estimates have been rounded and discrepancies may occur. Derived average was calculated using a linear extrapolation of percentage shift in total employment between 1996–97 and 1997–98.

Note: ASCO 4123 Forging Tradesperson, 4125 Metal Casting Tradespersons and 7912 Blasting Workers were all assigned as 100 workers in 1995–96 as calculations used to derive other data produced negative values for these occupations. Compensation was made in the overall calculation to keep the total workforce in line with figures published by the ABS for 1995–96.

Source: National apprentice and trainee statistics, ABS unpublished data based on 1996 Census benchmarks, Murphy & Douglas 1998.

Appendix C

ASCO Code	1995/96 Employed	1995/96 Commenced	1995/96 C:E ratio	1996/97 Employed	1996/97 Commenced	1996/97 C:E ratio	1997/98 Employed	1997/98 Commenced	1997/98 C:E ratio	2000/01 scenarios Employment forecast	C:E ratio 1	C:E ratio 2	C:E ratio 3	Scenario1	Scenario2	Scenario 3
11 Generalist Managers	128780	0	0.0000	121806	0	0.0000	115229	1	0.0000	125980	0.0000	0.0000	0.0000	1	*3*	1
12 Specialist Managers	253648	818	0.0032	260265	1390	0.0053	268183	1456	0.0054	298419	0.0054	0.0087	0.0058	1620	*2607*	1734
13 Farmers & Farm Managers	241223	756	0.0031	245542	719	0.0029	251048	588	0.0023	260359	0.0023	0.0012	0.0024	610	*301*	632
21 Science, Building & Engineering Prof	143193	190	0.0013	159350	307	0.0019	176559	559	0.0032	189461	0.0032	0.0059	0.0034	600	*1123*	650
22 Business & Information Prof	337508	87	0.0003	368071	35	0.0001	396870	47	0.0001	439082	0.0001	-0.0001	0.0001	52	*-40*	57
23 Health Prof	282925	0	0.0000	280845	103	0.0004	279974	918	0.0033	288423	0.0033	0.0082	0.0034	946	*2364*	987
24 Education Prof	359158	0	0.0000	363694	8	0.0000	369949	152	0.0004	388183	0.0004	0.0010	0.0004	159	*397*	165
25 Social, Arts & Miscellaneous Prof	230963	13	0.0001	246131	21	0.0001	262718	54	0.0002	287562	0.0002	0.0004	0.0002	59	*123*	64
31 Science, Engineering & Related Assoc. Prof	135467	1188	0.0088	131382	1882	0.0143	127757	2432	0.0190	136920	0.0190	0.0344	0.0200	2606	*4715*	2735
32 Business & Administration Associate Prof	246284	846	0.0034	243471	1890	0.0078	241685	4087	0.0169	248815	0.0169	0.0371	0.0175	4208	*9237*	4365
33 Managing Supervisors (Sales & Service)	381338	0	0.0000	374373	0	0.0000	368934	1	0.0000	381007	0.0000	0.0000	0.0000	1	*3*	1
34 Health & Welfare Associate Prof	51456	82	0.0016	55800	92	0.0017	60079	103	0.0017	63048	0.0017	0.0019	0.0017	108	*120*	109
39 Other Associate Prof	83073	559	0.0067	83768	813	0.0097	84852	509	0.0060	89362	0.0060	0.0049	0.0060	536	*439*	539
41 Mechanical & Fabricated Eng T'persons	206505	7392	0.0358	205826	6710	0.0326	208725	6380	0.0309	209793	0.0309	0.0235	0.0312	6475	*4922*	6545
42 Automotive Tradespersons	137229	9249	0.0674	138104	8965	0.0649	138614	7729	0.0554	135387	0.0554	0.0373	0.0542	7495	*5089*	7335
43 Electrical & Electronics Tradespersons	183777	5957	0.0324	180950	5802	0.0321	178870	5893	0.0329	192193	0.0329	0.0337	0.0355	6332	*6493*	6815
44 Construction Tradespersons	262143	8845	0.0337	259740	9110	0.0351	258448	10630	0.0411	294554	0.0411	0.0522	0.0460	12115	*15389*	13545
45 Food Tradespersons	92827	8992	0.0969	88921	9178	0.1032	85329	8463	0.0992	88860	0.0992	0.1026	0.1025	8813	*9121*	9109
46 Skilled Agricultural & Horticultural Workers	67571	1154	0.0171	69077	1070	0.0155	70923	1205	0.0170	72544	0.0170	0.0169	0.0172	1233	*1233*	1248
49 Other Tradespersons & Related Workers	201252	8590	0.0427	202737	8491	0.0419	205158	8699	0.0424	212242	0.0424	0.0420	0.0428	8999	*8910*	9075
51 Secretaries & Personal Assistants	245700	0	0.0000	230738	11	0.0000	216490	5	0.0000	224273	0.0000	0.0001	0.0000	5	*13*	5
59 Other Advanced Clerical & Service Workers	146820	226	0.0015	160158	278	0.0017	174493	367	0.0021	174948	0.0021	0.0029	0.0022	368	*516*	383
61 Intermediate Clerical Workers	807043	9902	0.0123	824915	11485	0.0139	846845	12883	0.0152	883048	0.0152	0.0196	0.0156	13413	*17390*	13807
62 Intermediate Sales & Related Workers	131717	5927	0.0450	128075	8833	0.0690	124928	9885	0.0791	137608	0.0791	0.1303	0.0842	10888	*17933*	11588
63 Intermediate Service Workers	430250	2689	0.0062	443727	7505	0.0169	459468	14596	0.0318	513372	0.0318	0.0700	0.0348	16308	*35889*	17855
71 Intermediate Plant Operators	196875	322	0.0016	182169	370	0.0020	167965	269	0.0016	177992	0.0016	0.0016	0.0017	285	*276*	300
72 Intermediate Machine Operators	111724	248	0.0022	107855	379	0.0035	104385	544	0.0052	105929	0.0052	0.0097	0.0053	552	*1027*	566
73 Road & Rail Transport Drivers	265598	254	0.0010	271710	116	0.0004	279162	811	0.0029	285078	0.0029	0.0058	0.0030	828	*1662*	849
79 Other Int. Production & Transport Workers	236842	942	0.0040	225791	1494	0.0066	215983	2333	0.0108	228082	0.0108	0.0210	0.0113	2464	*4799*	2589
81 Elementary Clerks	96463	3	0.0000	88979	2	0.0000	81734	22	0.0003	93167	0.0003	0.0008	0.0003	25	*68*	28
82 Elementary Sales Workers	652113	6063	0.0093	671988	8401	0.0125	695279	12243	0.0176	745247	0.0176	0.0301	0.0188	13123	*23414*	14001
83 Elementary Service Workers	110582	17	0.0002	102159	108	0.0011	94034	187	0.0020	105125	0.0020	0.0047	0.0022	209	*498*	228
91 Cleaners	203357	107	0.0005	206249	140	0.0007	210123	700	0.0033	218081	0.0033	0.0075	0.0035	727	*1644*	782
92 Factory Labourers	222137	3082	0.0139	226778	5211	0.0230	232529	8286	0.0356	234242	0.0356	0.0683	0.0363	8347	*15993*	8497
99 Other Labourers & Related Workers	404309	2374	0.0059	405781	4582	0.0113	409094	7282	0.0178	425617	0.0178	0.0357	0.0182	7576	*15182*	7753
Total	*8297827*	*86874*	*0.0105*	*8364704*	*105499*	*0.0126*	*8491498*	*130299*	*0.0154*	*8952002*	*0.0154*	*0.0228*		*138089*	*207744*	*144890*

NOTE: These forecasts are based on data from the 1997-98 Contract of training collection and the Econtech employment forecasts presented in the table. Any changes in training or economic policies since the time at which these forecasts were made must be considered when interpreting the data.

Source: National apprentice and trainee statistics, ABS unpublished data based on 1996 Census benchmarks, Murphy & Douglas 1998.

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Appendix D

ASCO Code	1995/96			1996/97			1997/98			2000/01 scenarios						
	Employed	Commenced	C E ratio	Employed	Commenced	C E ratio	Employed	Commenced	C E ratio	Employment forecast	C E ratio 1	C E ratio 2	C E ratio 3	Scenario 1	Scenario 2	Scenario 3
111 General Managers and Administrators	51821	0	0.0000	46124	0	0.0000	40511	0	0.0000	58820	0.0000	0.0000	0.0000	0	0	0
119 Miscellaneous General Managers	76958	0	0.0000	75683	0	0.0000	74718	1	0.0000	67160	0.0000	0.0000	0.0000	1	1	1
121 Resource Managers	58942	0	0.0000	57676	0	0.0000	56641	0	0.0000	62423	0.0000	0.0000	0.0000	0	0	0
122 Engineering, Distribution and Process Managers	72839	0	0.0000	72677	0	0.0000	72836	23	0.0003	80698	0.0003	0.0005	0.0003	25	38	26
123 Sales & Marketing Managers	60106	0	0.0000	66086	0	0.0000	72488	0	0.0000	80523	0.0000	0.0000	0.0000	0	0	0
129 Miscellaneous Specialist Managers	61780	818	0.0132	63826	1390	0.0218	66219	1433	0.0216	74774	0.0216	0.0258	0.0217	1618	1932	1620
131 Farmers and Farm Managers	241223	756	0.0031	245542	719	0.0029	251048	588	0.0023	260359	0.0023	0.0019	0.0023	610	507	610
211 Natural and Physical Science Professionals	46325	190	0.0041	50721	299	0.0059	55436	527	0.0095	72102	0.0095	0.0122	0.0095	685	880	687
212 Building and Engineering Professionals	96867	0	0.0000	108629	8	0.0001	121122	32	0.0003	117359	0.0003	0.0004	0.0003	31	47	31
221 Accountants, Auditors and Corporate Treasurers	108510	0	0.0000	106375	0	0.0000	104870	0	0.0000	115450	0.0000	0.0000	0.0000	0	0	0
222 Sales, Marketing and Advertising Professionals	46838	0	0.0000	54443	8	0.0001	62450	25	0.0004	68426	0.0004	0.0006	0.0004	27	41	27
223 Computing Professionals	91417	3	0.0000	104606	0	0.0000	118540	1	0.0000	130124	0.0000	0.0000	0.0000	1	0	1
229 Miscellaneous Business and Information Professionals	90744	84	0.0009	100648	27	0.0003	111210	21	0.0002	125081	0.0002	-0.0002	0.0002	24	-22	24
231 Medical Practitioners	58032	0	0.0000	51875	0	0.0000	47456	0	0.0000	50867	0.0000	0.0000	0.0000	0	0	0
232 Nursing Professionals	162612	0	0.0000	164296	103	0.0008	166750	320	0.0019	168312	0.0019	0.0029	0.0019	323	484	323
238 Miscellaneous Health Professionals	64282	0	0.0000	64874	0	0.0000	65769	598	0.0091	69245	0.0091	0.0136	0.0091	630	944	630
241 School Teachers	245159	0	0.0000	254075	0	0.0000	264311	0	0.0000	271804	0.0000	0.0000	0.0000	0	0	0
242 University and Vocational Education Teachers	72640	0	0.0000	68745	0	0.0000	65073	0	0.0000	69485	0.0000	0.0000	0.0000	0	0	0
249 Miscellaneous Education Professionals	41358	0	0.0000	40875	8	0.0002	40585	152	0.0037	44895	0.0037	0.0056	0.0038	168	252	168
251 Social Welfare Professionals	54504	0	0.0000	60205	0	0.0000	66294	29	0.0004	74397	0.0004	0.0007	0.0004	33	49	33
252 Miscellaneous Social Professionals	47058	0	0.0000	53581	0	0.0000	60441	0	0.0000	68175	0.0000	0.0000	0.0000	0	0	0
253 Artists and Related Professionals	94711	13	0.0001	97904	21	0.0002	101602	21	0.0002	105446	0.0002	0.0002	0.0002	22	25	22
254 Miscellaneous Professionals	34892	0	0.0000	34462	0	0.0000	34381	4	0.0001	39544	0.0001	0.0002	0.0001	5	7	5
311 Medical and Science Technical Officers	44788	120	0.0027	39931	64	0.0016	35172	64	0.0018	30124	0.0018	0.0014	0.0018	55	42	55
312 Building and Engineering Associate Professionals	90701	1068	0.0118	91432	1818	0.0199	92588	2368	0.0256	106798	0.0256	0.0325	0.0256	2731	3469	2736
321 Finance Associate Professionals	66482	0	0.0000	65728	0	0.0000	65250	28	0.0004	69409	0.0004	0.0006	0.0004	30	45	30
329 Miscellaneous Business and Administrative Associate Professionals	179801	848	0.0047	177743	1890	0.0106	178435	4059	0.0230	179405	0.0230	0.0322	0.0230	4127	5769	4128
331 Shop Managers	215292	0	0.0000	198503	0	0.0000	182245	0	0.0000	181559	0.0000	0.0000	0.0000	0	0	0
332 Hospitality and Accommodation Managers	96189	0	0.0000	102989	0	0.0000	110391	1	0.0000	120797	0.0000	0.0000	0.0000	1	2	1
339 Miscellaneous Managing Supervisors (sales and service)	69854	0	0.0000	72882	0	0.0000	76298	0	0.0000	78652	0.0000	0.0000	0.0000	0	0	0
341 Enrolled Nurses	26202	0	0.0000	29186	0	0.0000	32383	0	0.0000	29124	0.0000	0.0000	0.0000	0	0	0
342 Welfare Associate Professionals	11937	9	0.0008	10914	23	0.0021	9918	30	0.0030	17127	0.0030	0.0042	0.0030	52	71	52
349 Miscellaneous Health and Welfare Associate Professionals	13317	73	0.0055	15500	69	0.0045	17798	73	0.0041	16797	0.0041	0.0034	0.0041	69	57	69
391 Police Officers	47712	392	0.0082	44218	418	0.0095	40849	96	0.0024	42268	0.0024	-0.0006	0.0024	99	-25	99
399 Miscellaneous Associate Professionals	35361	167	0.0047	39550	395	0.0100	44004	413	0.0094	47094	0.0094	0.0117	0.0094	442	552	442
411 Mechanical Engineering Tradespersons	134341	3819	0.0269	131058	2859	0.0218	128292	2942	0.0229	132538	0.0229	0.0209	0.0229	3039	2774	3040
412 Fabrication Engineering Tradespersons	72184	3135	0.0434	74768	2463	0.0329	78434	2769	0.0353	77255	0.0353	0.0312	0.0353	2727	2413	2727
421 Automotive Tradespersons	137229	9249	0.0674	135104	8965	0.0649	139614	7715	0.0553	135387	0.0553	0.0492	0.0552	7481	6660	7479
431 Electrical and Electronics Tradespersons	183777	5756	0.0313	180950	5740	0.0317	178870	5774	0.0323	192193	0.0323	0.0328	0.0323	6204	6296	6209
441 Structural Construction Tradespersons	155821	5649	0.0363	157565	6025	0.0382	160048	6953	0.0434	171019	0.0434	0.0470	0.0435	7430	8044	7435
442 Final Finishes Construction Tradespersons	50551	1177	0.0233	49859	1081	0.0218	48960	1246	0.0254	61280	0.0254	0.0265	0.0255	1559	1825	1563
443 Plumbers	55771	1974	0.0354	52517	1959	0.0373	49428	2349	0.0475	62255	0.0475	0.0536	0.0476	2959	3336	2966
451 Food Tradespersons	92827	8992	0.0969	88921	9178	0.1032	85329	8483	0.0992	88860	0.0992	0.1003	0.0992	8813	8916	8817
461 Skilled Agricultural Tradespersons	18080	0	0.0000	14217	21	0.0015	12379	20	0.0016	12340	0.0016	0.0024	0.0016	20	30	20
462 Horticultural Tradespersons	51491	1154	0.0224	54860	1049	0.0191	58544	1185	0.0202	60204	0.0202	0.0192	0.0202	1219	1153	1219
491 Printing Tradespersons	41168	1031	0.0250	38958	823	0.0211	36872	694	0.0188	36296	0.0188	0.0157	0.0188	683	570	683
492 Wood Tradespersons	37043	1692	0.0457	37825	1556	0.0414	38387	1733	0.0451	32936	0.0451	0.0449	0.0451	1487	1478	1485
493 Hairdressers	38907	5069	0.1303	40548	5068	0.1250	42406	4967	0.1171	43017	0.1171	0.1106	0.1171	5039	4758	5039
494 Textile, Clothing and Related Tradespersons	29266	239	0.0082	25178	245	0.0097	21116	606	0.0287	22057	0.0287	0.0390	0.0287	633	859	633
498 Miscellaneous Tradespersons and Related Workers	54869	1075	0.0196	60430	1330	0.0220	66378	1208	0.0182	77937	0.0182	0.0175	0.0182	1418	1384	1421
511 Secretaries & Personal Assistants	245700	0	0.0000	230738	11	0.0000	216490	5	0.0000	224273	0.0000	0.0000	0.0000	5	8	5
591 Advanced Numerical Clerks	102945	0	0.0000	109022	4	0.0000	115714	112	0.0010	117384	0.0010	0.0015	0.0010	114	170	114
599 Miscellaneous Advanced Clerical and Service Workers	43874	226	0.0052	51136	274	0.0054	58779	255	0.0043	57583	0.0043	0.0039	0.0043	250	226	250
611 General Clerks	65053	9653	0.1484	69394	11190	0.1613	74137	12128	0.1636	82585	0.1636	0.1712	0.1638	13510	14138	13525
612 Keyboard Operators	108819	18	0.0002	112854	65	0.0006	117477	70	0.0006	125755	0.0006	0.0008	0.0006	75	102	75

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ASCO Code	1995/96			1996/97			1997/98			2000/01 scenarios						
	Employed	Commenced	C E ratio	Employed	Commenced	C E ratio	Employed	Commenced	C E ratio	Employment forecast	C E ratio 1	C E ratio 2	C E ratio 3	Scenario 1	Scenario 2	Scenario 3
613 Receptionists	130257	6	0.0000	129796	1	0.0000	129903	12	0.0001	133546	0.0001	0.0001	0.0001	12	15	12
614 Intermediate Numerical Clerks	310112	197	0.0006	305915	135	0.0004	302994	130	0.0004	315664	0.0004	0.0003	0.0004	135	103	135
615 Material Recording and Dispatching Clerks	92117	0	0.0000	93499	0	0.0000	95326	1	0.0000	97230	0.0000	0.0000	0.0000	1	2	1
619 Miscellaneous Intermediate Clerical Workers	100685	28	0.0003	113459	94	0.0008	127008	522	0.0041	126267	0.0041	0.0060	0.0041	527	773	527
621 Intermediate Sales and Related Workers	131717	5927	0.0450	128075	8833	0.0690	124928	9883	0.0791	137808	0.0791	0.0962	0.0792	10886	13233	10897
631 Carers and Aides	203230	343	0.0017	206302	2212	0.0107	164919	6313	0.0383	231180	0.0383	0.0566	0.0384	8849	13079	8865
632 Hospitality Workers	141762	1884	0.0133	145591	4380	0.0301	195266	6815	0.0349	173392	0.0349	0.0457	0.0349	6052	7925	6045
639 Miscellaneous Intermediate Service Workers	85258	442	0.0052	91834	1202	0.0131	82744	2099	0.0254	108799	0.0254	0.0355	0.0254	2760	3858	2768
711 Mobile Plant Operators	103426	92	0.0009	97983	253	0.0026	96111	140	0.0015	110329	0.0015	0.0017	0.0015	161	192	161
712 Intermediate Stationary Plant Operators	93450	229	0.0025	84188	114	0.0014	75479	126	0.0017	67864	0.0017	0.0013	0.0017	113	87	113
721 Intermediate textile, Clothing and Related Machine Operators	51492	81	0.0016	49397	129	0.0026	48086	278	0.0058	51519	0.0058	0.0079	0.0058	298	408	298
729 Miscellaneous Intermediate Machine Operators	60232	167	0.0028	58459	250	0.0043	57185	268	0.0047	54410	0.0047	0.0056	0.0048	253	304	253
731 Road and Rail Transport Drivers	265598	254	0.0010	271710	116	0.0004	291192	811	0.0028	285078	0.0028	0.0037	0.0028	794	1055	794
791 Intermediate Mining and Construction Workers	41019	6	0.0001	40294	7	0.0002	40202	10	0.0002	42228	0.0002	0.0003	0.0002	11	13	11
799 Miscellaneous Intermediate Production and Transport Workers	195823	936	0.0048	185497	1487	0.0080	175782	2323	0.0132	185855	0.0132	0.0174	0.0132	2456	3240	2458
811 Elementary Clerks	96483	3	0.0000	88979	2	0.0000	81734	22	0.0003	93167	0.0003	0.0004	0.0003	25	38	25
821 Sales Assistants	482647	5797	0.0120	498333	8161	0.0164	516572	11681	0.0226	550785	0.0226	0.0279	0.0226	12433	15342	12442
829 Miscellaneous Elementary Sales Workers	169466	266	0.0016	173855	240	0.0014	178707	582	0.0033	194462	0.0033	0.0041	0.0033	633	797	634
831 Elementary Service Workers	110562	17	0.0002	102159	108	0.0011	94034	187	0.0020	105125	0.0030	0.0029	0.0020	209	308	209
911 Cleaners	203357	107	0.0005	206249	140	0.0007	210123	700	0.0033	218081	0.0033	0.0047	0.0033	727	1032	727
921 Process Workers	160301	2988	0.0186	158973	5210	0.0328	158325	8286	0.0523	155385	0.0523	0.0892	0.0523	8132	10750	8131
922 Product Packers	61835	0	0.0000	67806	0	0.0000	74204	0	0.0000	78856	0.0000	0.0000	0.0000	0	0	0
991 Mining, Construction and Related Labourers	86515	553	0.0064	89924	1002	0.0111	93807	1247	0.0133	101263	0.0133	0.0187	0.0133	1348	1898	1347
992 Agricultural and Horticultural Labourers	138718	1534	0.0111	138855	2893	0.0208	139615	4102	0.0294	140991	0.0294	0.0385	0.0294	4142	5434	4143
993 Elementary Food Preparation and Related Workers	122150	67	0.0005	120989	212	0.0018	120343	1314	0.0109	124514	0.0109	0.0181	0.0109	1360	2008	1360
999 Miscellaneous Labourers and Related Workers	56926	220	0.0039	56013	475	0.0085	55330	619	0.0112	58849	0.0112	0.0148	0.0112	658	874	659
Total	*9297827*	*86391*	*0.0104*	*8354704*	*104820*	*0.0125*	*8461408*	*130580*	*0.0154*	*8952002*	*0.0154*	*0.0179*		*139442*	*162344*	*139560*

NOTE: These forecasts are based on data from the 1997-98 Contract of training collection and the Econtech employment forecasts presented in the table. Any changes in training or economic policies since the time at which these forecasts were made must be considered when interpreting the data.

Source: National apprentice and trainee statistics, ABS Unpublished data based on 1996 Census benchmarks, Murphy & Douglas 1998.

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